

MAY • 1959

Metal Products Manufacturing

*Serving the
Appliance and
Fabricated Metal Products
Industry*

Heater Line Features Automatic Welding — Page 20



Finishing Line Designed for Two-Man Operation — Page 25

Appliance Manufacturing a Rapidly-Expanding Industry — Page 29

119

4

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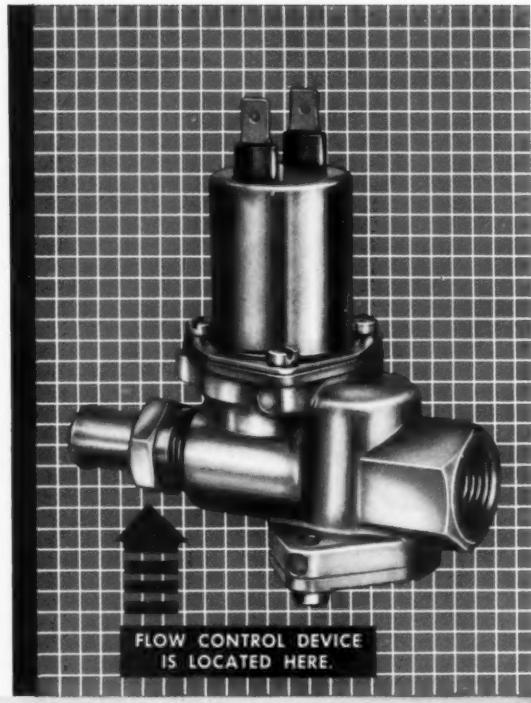
MAY 5
DETROIT, MI
Saw

If you are controlling

Water Flow

—specify the Detroit S-25 solenoid valve. It gives positive opening and closing from $\frac{1}{4}$ to 6 gpm— $2\frac{1}{2}$ to 200 psi—up to 180°F *. The valve has an optional flow control device built into the outlet to insure accurate water delivery. It's available with pipe, tubing or hose connections and with a wide variety of terminals. Many different mounting brackets can be obtained. Listed by Underwriters' Laboratories.

*Up to 200° for special applications

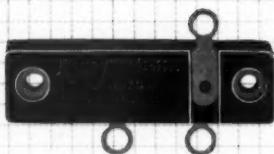


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AMERICAN-STANDARD
DETROIT CONTROLS DIVISION

CLASS 1



SHOWN ACTUAL SIZE

LENGTH 1-5/8" — WIDTH 7/16" — DEPTH 11/32"

CLASS 4



SHOWN ACTUAL SIZE

LENGTH 1-3/16" — WIDTH 7/16" — DEPTH 17/32"

If you are controlling

Electric Current Flow

—and want positive action in a small space, look to a Detroit TyniSwitch®. These miniature snap switches give you the long life and precision you need, are virtually bounceless and resist shock and vibration. Class 1 Tyni-Switches are top mounted and top actuated and Class 4 all side mounted and top actuated. Both have a wide variety of actuators and terminals. Listed by Underwriters' Laboratories.

There are many applications where these Detroit products can be used as a team—others where they are used alone. Write for Bulletin 275 covering the S-25 solenoid valve and Bulletins 263 and 270 on TyniSwitches. Detroit Controls Division of American Standard, 5900 Trumbull Avenue, Detroit 8, Michigan.

Underwriters' Laboratories listed and
Canadian Standards Assoc. approved.
15 Amp. 125/250 V. A.C. Non-Ind. 1/2 H.P. 125/250 V. A.C.
Contractual approvals for U.S. Gov't applications





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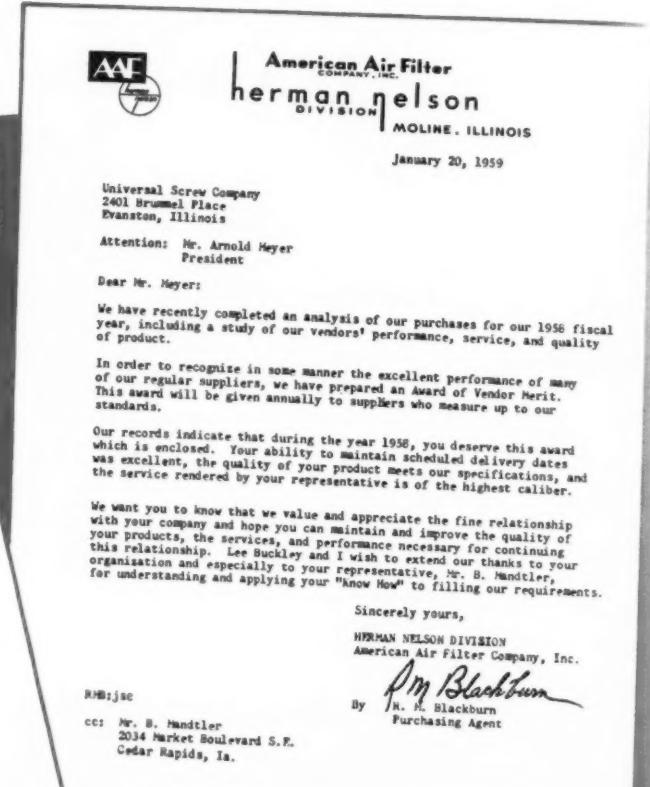
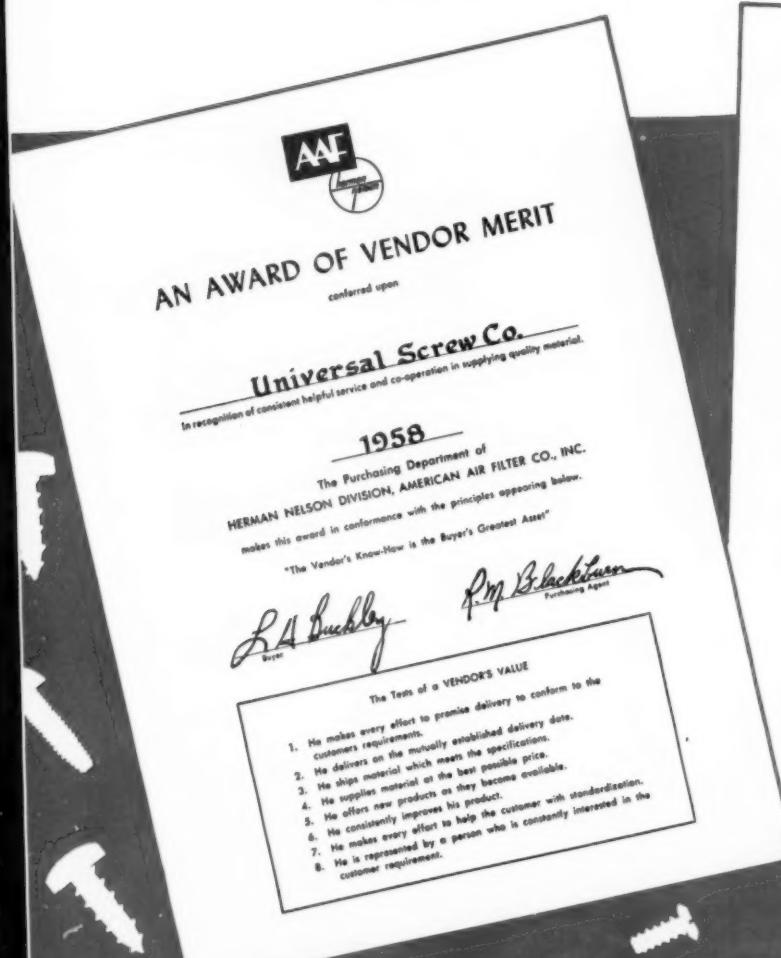
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ARMCO STEEL



Armco Division • Sheffield Division • The National Supply Company • Armco Drainage & Metal Products, Inc. • The Armco International Corporation • Union Wire Rope Corporation • Southwest Steel Products

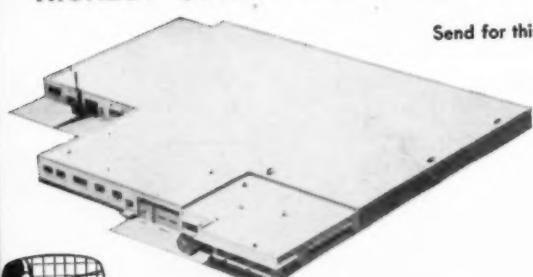
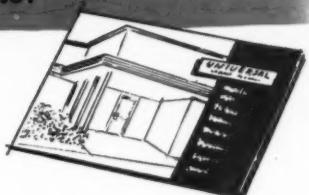
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MPM

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MONTHLY TRADE PUBLICATION

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MAY • 1959

VOL. 16 • NO. 5

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METAL PRODUCTS MANUFACTURING

FROM RAW METAL TO FINISHED PRODUCT

A trade publication devoted to the interests of the metal products manufacturing industry with special editorial attention to home appliances. The editorial scope covers design, engineering, market and statistical information and technical and practical information on plant facilities and all phases of manufacturing "from raw metal to finished product." Free controlled circulation to top management, purchasing, engineering and key plant management and supervision in metal product manufacturing plants. To others, subscription price is \$8.00 per year, domestic. To all other countries \$10.00 per year (U.S. funds). Single copies, \$1.00.

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REPUBLIC STAINLESS STEEL PROVIDES UNIFORM QUALITY



58-9

Here's a good example, illustrating how uniform quality pays off in superior products. The material is Republic ENDURO® Stainless Steel Strip—used to fabricate steel parts around heating elements of electric ranges. This application requires a combination of special characteristics.

Stainless meets these requirements by offering a combination of advantages unobtainable in any other commercial metal. It provides exceptionally high resistance to heat and corrosion; doesn't tarnish, is easy to clean and keep clean; has no applied surface to chip, peel, or wear away.

Tuttle and Kift Division, Ferro Corporation, Chicago, Illinois, manufacture a large share of all assembled electric range heating elements produced. In doing so,

they find they can depend on Republic Stainless Steel to meet the rigorous standards they demand. Most significant of all, they find the quality is consistent. They also like Republic's excellent metallurgical and delivery services.

Fabrication of heating elements for electric ranges is but one of many applications where the uniformly high quality of Republic Stainless Steel produces excellent results. Use this aristocrat of metals to give your product prestige, eye-appeal, buy-appeal, and built-in sales advantages never before experienced.

It will pay you to get full information on Republic Stainless Steel. Contact your local steel service center, your Republic sales office, or mail the convenient coupon.

FOR SUPERIOR FABRICATION



CONSISTENT PAINT-HOLDING CAPACITY makes Republic Electro Paintlok® ideal for water cooler housings, or for exterior panels of ranges, freezers, dryers, washers, air-conditioners and other major appliances and cabinets for home, commercial and industrial applications. Produced by electro-galvanizing and a chemical treatment process for paint adherence. Electro Paintlok Sheets are shipped from the mill in prime condition for painting.



SUPERIOR FABRICATION FOR OUTDOOR REQUIREMENTS is a characteristic of Republic Galvannealed Sheets. Experience proves its durability, even when only one side is painted. Hot dip galvanizing plus special heat treatment gives Galvannealed its weather-resistant qualities plus a surface exceptionally well suited to take and hold paint. Forming operations fail to damage these outstanding surface characteristics. Flaking or peeling is practically eliminated.

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GENERAL INDUSTRIES

Smooth Power

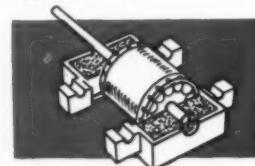
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1/1800 H. P. TO 1/36 H. P.

Greatly Increased Oil Capacity...

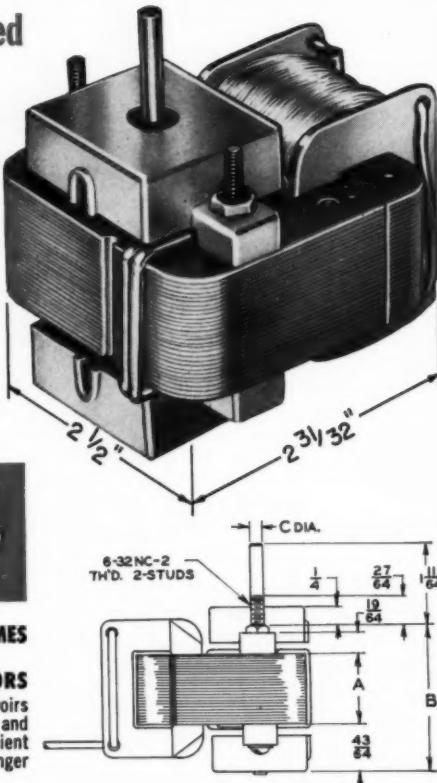
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General Industries' Model "H" 2-Pole Shaded-Pole motor is designed and constructed with features that assure thousands of EXTRA HOURS of service under the most adverse operating conditions. Rugged, quiet, smooth running. A giant in the small motor field. Available in nine models that cover a wide range of applications.



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Oversized oil bearing reservoirs hold considerably more oil and wicking assuring more efficient lubrication over a much longer period of time.



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H-4-CW H-4-CCW	1/400	0.75	1.00	3350	.200	9.0	1/2"	1 3/4"	.1817"	1.5
H-5-CW H-5-CCW	1/200	1.25	1.80	3350	.250	11.0	5/8"	1 3/4"	.1817"	1.6
H-6-CW H-6-CCW	1/150	1.40	2.20	3375	.270	12.5	3/4"	1 3/4"	.1817"	1.8
H-7-CW H-7-CCW	1/110	1.55	2.50	3400	.290	13.0	7/8"	1 3/4"	.1817"	1.9
H-8-CW H-8-CCW	1/100	1.85	3.00	3400	.300	15.0	1"	2 1/4"	.1817"	2.0
H-9-CW H-9-CCW	1/80	2.00	3.50	3425	.335	17.5	1 1/8"	2 1/4"	.1817"	2.4
H-12-CW H-12-CCW	1/70	2.20	4.35	3450	.390	18.0	1 1/2"	2 1/4"	.1817"	2.8
H-14-CW H-14-CCW	1/55	2.30	4.70	3490	.395	21.0	1 3/4"	2 1/4"	.250"	3.3
H-16-CW H-16-CCW	1/50	3.00	5.00	3490	.400	25.0	2"	3 1/4"	.250"	3.8

Write today for catalog sheet and quantity-price quotations.

THE GENERAL INDUSTRIES CO.

DEPT. GF • ELYRIA, OHIO



from the
Editor's Mail



Hot spray an accepted tool

Gentlemen: I wish to offer my compliments to you for the article "Hot spray a useful, proven aid to finishing," appearing in your March, 1959 issue.

Reading the article, I cannot help but retrace in my thoughts my experiences dating back over ten years, when I first tried so hard to sell the paint industry on the benefits of hot spray. You will probably remember I had traveled all over the country to give talks to paint manufacturers and associations on what hot spray could mean to the finisher. I remember the many "doubting Thomases" that I encountered. Now, however, it seems that hot spray is an accepted tool in industry.

I would like to pass on to my licensees in Europe a copy of your article. Could you possibly send me eight or ten reprints? You may charge me for them.

James A. Bede, President
Bede International Development Co.
Cleveland, Ohio

Of help to purchasing

Gentlemen: Please send me a copy of the newly-revised edition of "The end uses of zinc die castings."

I should like to add that we find your magazine very informative, and look forward to receiving each new issue.

May I also request that you add my name to your general mailing list so that I may receive a personal copy of your magazine. By so doing, I will be certain of receiving each and every issue for the use of the Purchasing Department of our company.

Sam Kupferman, Purchasing Agent
Continental Vending Machine Co.
Div. Continental Industries, Inc.
Westbury, L. I., N. Y.

Feature on Norge

Gentlemen: Thank you for your letter of March 9 and the copy of the March issue of METAL PRODUCTS MANUFACTURING magazine which carries a feature on the Norge combination washer-dryer.

This is a very fine magazine, and I am wondering whether it would be possible that my name be placed on the list to receive this publication each month.

R. L. Cogswell, Service Publication Supervisor
Norge Sales Corp.
Borg-Warner Corp., Muskegon, Mich.

Selected recent comments

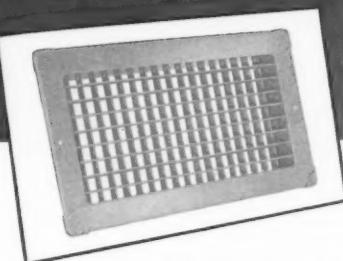
from MPM readers

I find many interesting articles in your magazine and appreciate receiving it.

A. C. Erickson, Quality Control Director
Whirlpool Corp., St. Paul, Minn.
to Page 10 →

MAY • 1959 MPM

TWO CULPRITS OUTWITTED!



**Read How Lima Register Company
and Egyptian Teamed Up Against
CAUSTIC CLEANING SOLUTIONS AND SALT ATMOSPHERES**

WHEN LIMA REGISTER COMPANY was creating their now-famous "Flexi-Trol" air conditioning registers and grilles, Lima contacted **EGYPTIAN**. Help was needed in solving a double-barreled finishing problem:

Problem #1 — Lima wanted a finish that would resist caustic alkaline cleaning solutions (often sloshed on base board registers by cleaning crews) — and atmospheric salt sprays (responsible for rust, corrosion and peeling, particularly in coastal areas).

Problem #2 — Also essential was a durable finish that would stand up under severe punishment. A particular shade of Beige is Lima's established mark of quality . . . therefore it was imperative that the new coating match other Lima lines perfectly.

Equipped with the facts, Egyptian's topflight research department moved into high gear . . . checked, experimented, tested and came up with the answer: *Coat with an EGYPTIAN EPOXY TYPE ENAMEL.*

THE RESULTS:

- **Costly damage by caustic solutions averted** — no peeling experienced in the "Flexi-Trol" line.
- **Exceptional resistance to salt atmospheres noted** — "Flexi-Trol" units scoffed at high humidity and exterior exposure.
- **Standard Lima color maintained** — appearance improved.
- **Epoxy application required no major change in equipment.**

Take a tip from Lima . . . they put an Egyptian Finishes Specialist on their staff — but not on their payroll!



**He's On Your Staff
But Not Your Payroll**

It's good sense to check with an Egyptian Finishes Specialist first . . . His Finishing Know-How can turn good sense into SAVED DOLLARS.

**The Egyptian Lacquer Mfg. Company
Box 444, Newark 1, New Jersey**

Have an Egyptian Finishes Specialist call on me. I would like his suggestions on:

Finishing New Product Economizing Our System Improving Our Finish

Name _____

Company _____

Street _____

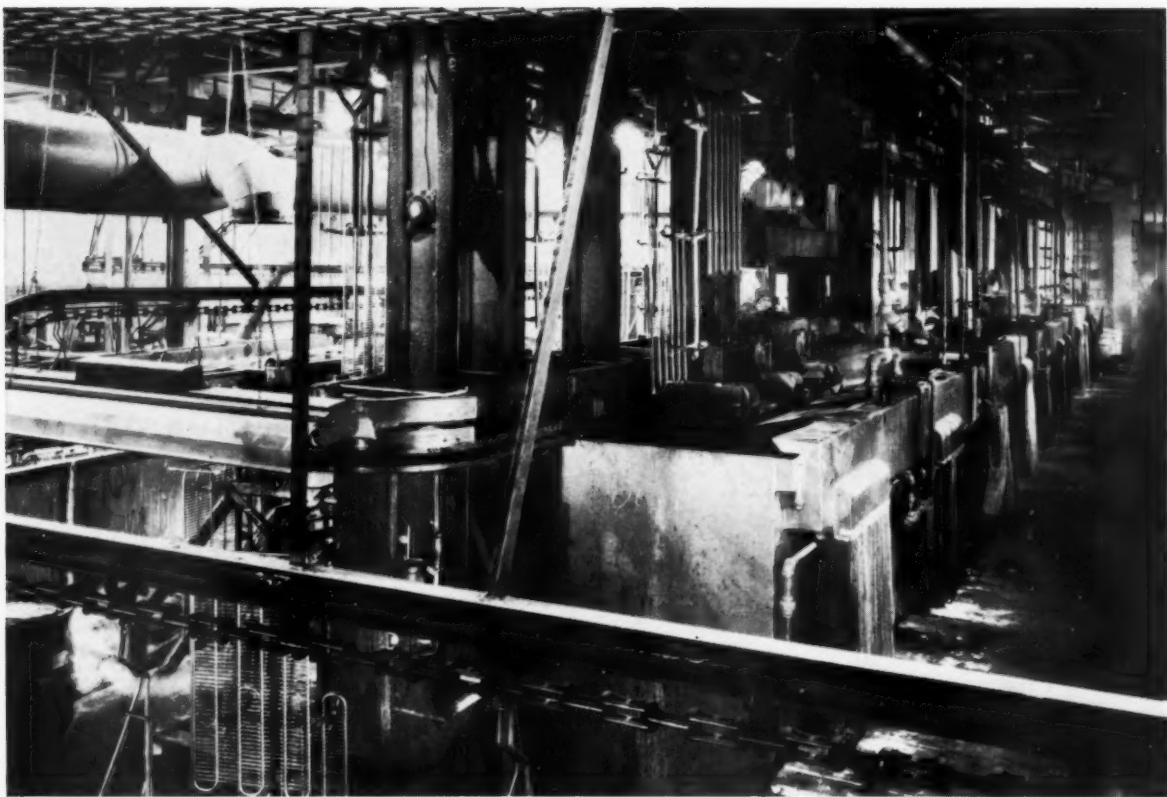
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EGYPTIAN
Chemical Coatings

The EGYPTIAN LACQUER MANUFACTURING CO.

BOX 444, NEWARK 1, NEW JERSEY

Executive Offices: ROCKEFELLER CENTER, N.Y. • Plants: So. KEARNY, N.J.; LAFAYETTE, IND.



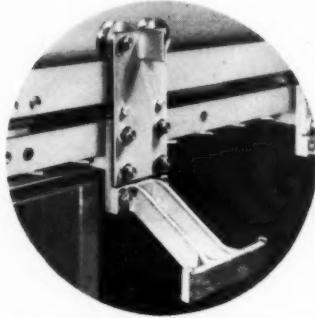
New MEAKER "Uniline" plating machine steps up production at UNION STEEL

A REAL WORKHORSE . . .

That's what Union Steel's production and engineering department says about their new Meaker "Uniline" machine. Presently, the machine is zinc plating evaporator shelves for refrigerator units at a driving rate of 350 pieces per hour . . . 23 hours a day . . . seven days a week. The Meaker "Uniline" machine has been at this steady grind since its installation . . . and with no downtime at all as has been experienced with adjacent machines of other makes.

STRUCTURAL SOUNDNESS AND SIMPLICITY . . .

These two factors are a prime requisite in any Meaker machine, spelling dollar savings plus superior controlled quality and increased production. "Meaker" is the keyword to better plating. Remember . . . before you buy just any machine, ask men like Mr. Ray Marshall at Union Steel why he says that the next machine he buys will be another Meaker . . . then decide on the best . . . Meaker, the name that stands for fine equipment, superior engineering, plus service.

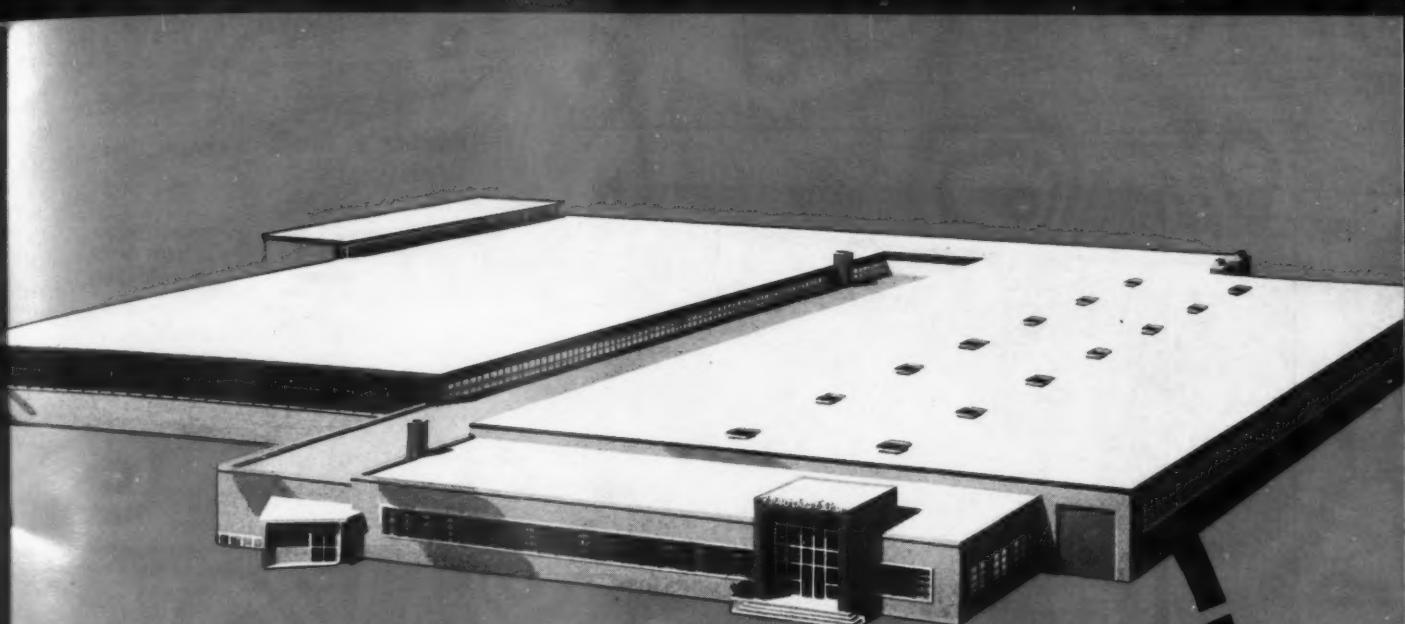


THE CARRIERS . . . Full rackload is carried on steel rollers with permanently lubricated bearings. Electrical contacts on the carriers are positive in action due to constant load pressure and are easy and inexpensive to maintain. Current path from cathode rail to rack is short, minimizing voltage loss.

Write for Free
Bulletin U-658 . . .

THE MEAKER COMPANY
1629 SOUTH 55th AVE., CHICAGO 50, ILL.





Look to Robertshaw ...for domestic electric controls

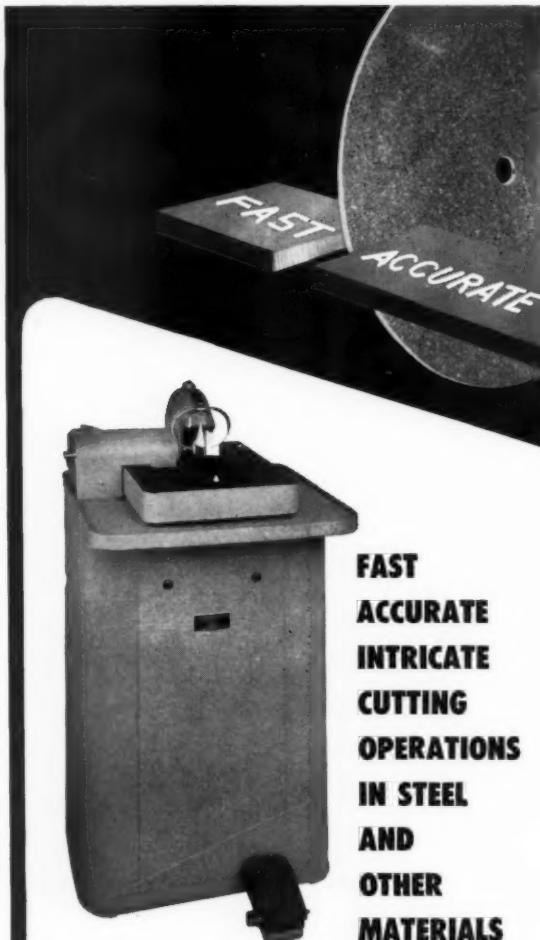
In our Indiana plant we are now devoting all our energies and production facilities—exclusively—to the manufacture of better electric controls for modern living. Controls that have the traditional Robertshaw quality of reliability.

All design, development, engineering and production facilities for this purpose are brought together in this modern plant to give you the most efficient electrical controls possible. Whatever your requirements or problems, give us a call. Our engineers will be glad to assist in every way possible. **Indiana Division, Robertshaw-Fulton Controls Company, Indiana, Pennsylvania.**

VMA 6818

Robertshaw





Aminco's **CUTTING-OFF MACHINE** cuts steels and other metals, glass, stone, plastic and quartz quickly and accurately. Applicable to every type of industrial and laboratory installation, the unit is simple to operate, even for unskilled personnel. Special features include a miter gage & scale; foot-operated control; spray heads that play a steady stream of coolant to cutting wheel; adjustable stop to permit cutting of exact duplicate pieces; cutting table mounted on ball bearings; bonded, abrasive cutting wheel, 12 in. in diameter; models available for 115, 230 and 440 volts.

5-2416 Cutting-off Machine, 115 volts, 60-cycle, single phase, 1 1/2 h.p. motor, size: 25 x 25 x 48 inches high \$673

*Full Information in Bulletin 2237-W-2
Free upon request*

American Instrument Co., Inc.
8030 Georgia Ave., Silver Spring, Maryland

Editor's Mail

→ from Page 6

I have gleaned many valuable suggestions on organic finishing from MPM, and look forward to continued help from this quarter.

Harold Baker, Materials Engineer
Stromberg-Carlson Div. General
Dynamics Corp.
Rochester, N. Y.

Thank you for sending me MPM. Your continued good work is appreciated by everyone.

Dick Schnell, Plant Superintendent
Midwest Mfg. Div., Admiral Corp.
Galesburg, Ill.

I have enjoyed receiving and reading your MPM magazine, as it has very timely and informative articles which keep you up to date on new happenings. In your February issue, I noticed Chicago Mill & Lumber Company's letter of appreciation for your advertising, which has contributed to their present growth in business. This is a fact which I know is true, because we have been a satisfied customer of theirs since 1936. They not only make and sell many different types of fine containers, but give very good service also. We belong to the National Safe Transit which I see you initiated, and we feel it does a very good job in improving products as well as lowering costs in many cases. Another important point about NST is that the different branches of the government realizing the value of NST to manufacturers are now changing from their own packing specifications for appliances and letting the manufacturers supply products in their own domestic or export crates, thus speeding up the orders as well as lowering packing costs greatly.

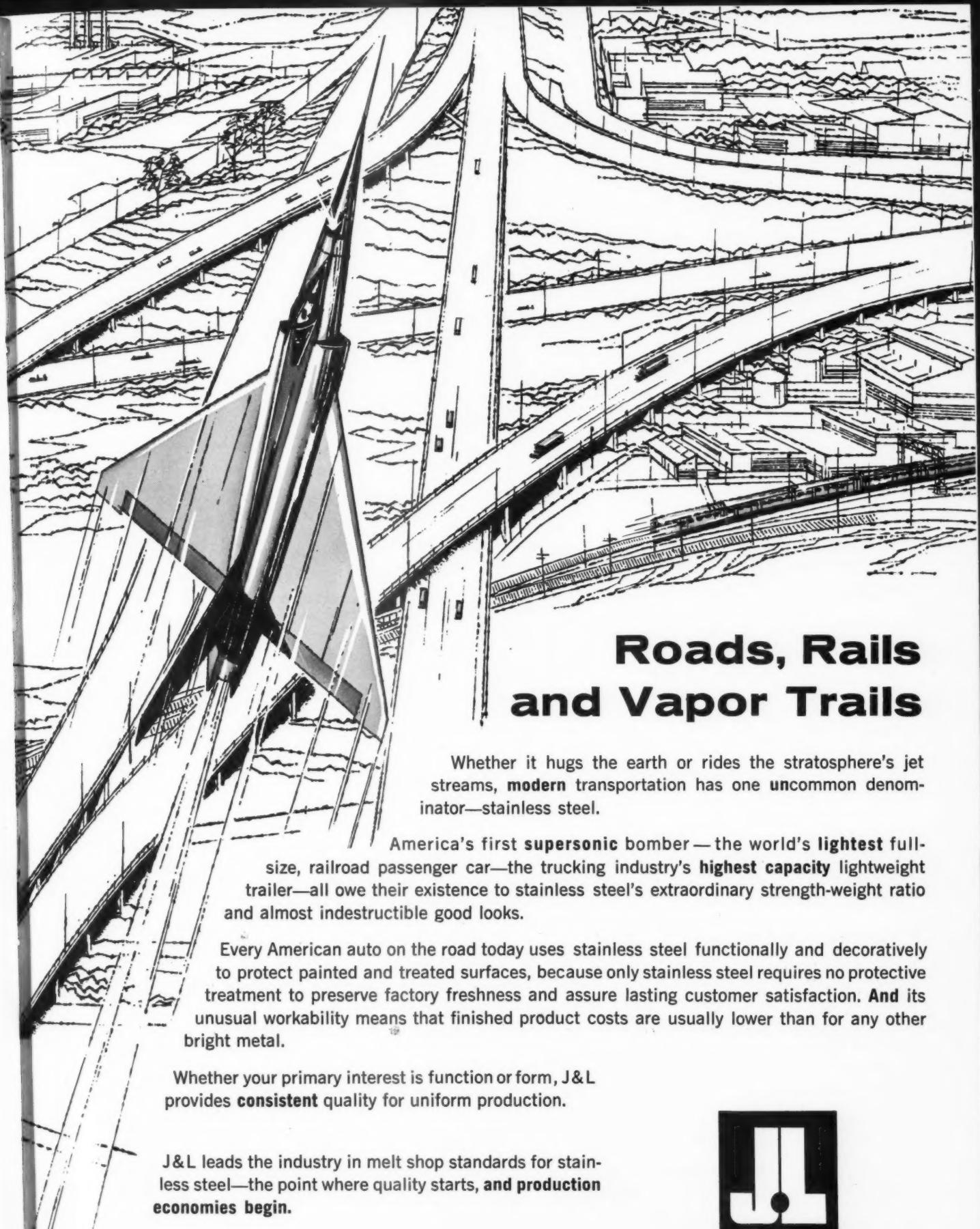
Jack Rigg, Packaging Engineer
Midwest Mfg. Corp.,
Div. of Admiral Corp.
Galesburg, Ill.

This is one of the best organs that I receive, and I want to thank you very much for the opportunity to keep on receiving it.

Wayne Wood, General Superintendent
Acme Industries, Inc.
Jackson, Mich.

I receive your magazine each month and always enjoy it. Thank you very much for keeping me on your mailing list.

Bryce Richard, Supervisor, Laundry
Equipment Quality Control
Westinghouse Electric Corp.
Columbus, Ohio



Roads, Rails and Vapor Trails

Whether it hugs the earth or rides the stratosphere's jet streams, modern transportation has one uncommon denominator—stainless steel.

America's first **supersonic** bomber—the world's **lightest** full-size, railroad passenger car—the trucking industry's **highest capacity** lightweight trailer—all owe their existence to stainless steel's extraordinary strength-weight ratio and almost indestructible good looks.

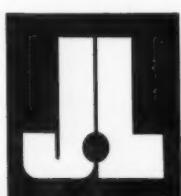
Every American auto on the road today uses stainless steel functionally and decoratively to protect painted and treated surfaces, because only stainless steel requires no protective treatment to preserve factory freshness and assure lasting customer satisfaction. And its unusual workability means that finished product costs are usually lower than for any other bright metal.

Whether your primary interest is function or form, J&L provides **consistent** quality for uniform production.

J&L leads the industry in melt shop standards for stainless steel—the point where quality starts, and production economies begin.



Plants and Service Centers:
Los Angeles • Kenilworth (N. J.) • Youngstown • Louisville (Ohio) • Indianapolis • Detroit



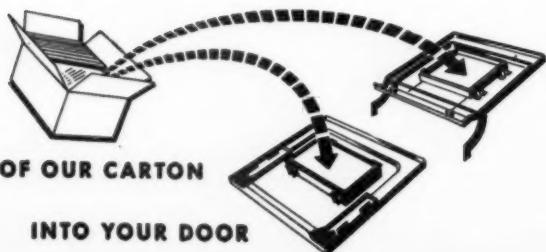
STAINLESS
SHEET • STRIP • BAR • WIRE

Jones & Laughlin Steel Corporation • STAINLESS and STRIP DIVISION • Box 1404 • Detroit 24

The Answer to "visible" ovens



This is a partial list of range manufacturers which use the PERMA-VIEW window in their built-in ovens: Admiral Corporation; Athens Stove Works; Avco Manufacturing Corporation, Crosley Division; Canadian Admiral Corporation, Ltd.; Canadian General Electric Company Limited; Canadian Westinghouse Company Limited; Dixie Products, Inc.; General Electric Company; Gibson Refrigerator Company; Gray & Dudley Company; Hardwick Stove Company; Hotpoint Company; Kelvinator Division, American Motors Corporation; Midwest Manufacturing Corporation; Moffats Limited; Mt. Vernon Furnace & Mfg. Co.; Oakland Foundry; Pan Pacific Manufacturing Co.; Philco Corporation; Phillips & Buttorff Corporation; Preway, Inc.; Samuel Stamping & Enameling Company; J. B. Slattery & Bros., Inc.; National Stove; Stiglitz Corporation; The Stove Works, Inc.; Tennessee Stove Works; Utility Appliance Corp.; Harry C. Weiskitel Co. Inc.; and Westinghouse Electric Corporation.



A phone call or letter will bring an experienced engineer to your plant for prompt consultation. Phone MArket 4-1591, Walled Lake, Michigan.

e'baking...

PERMA-VIEW

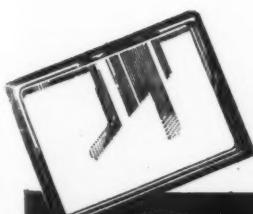
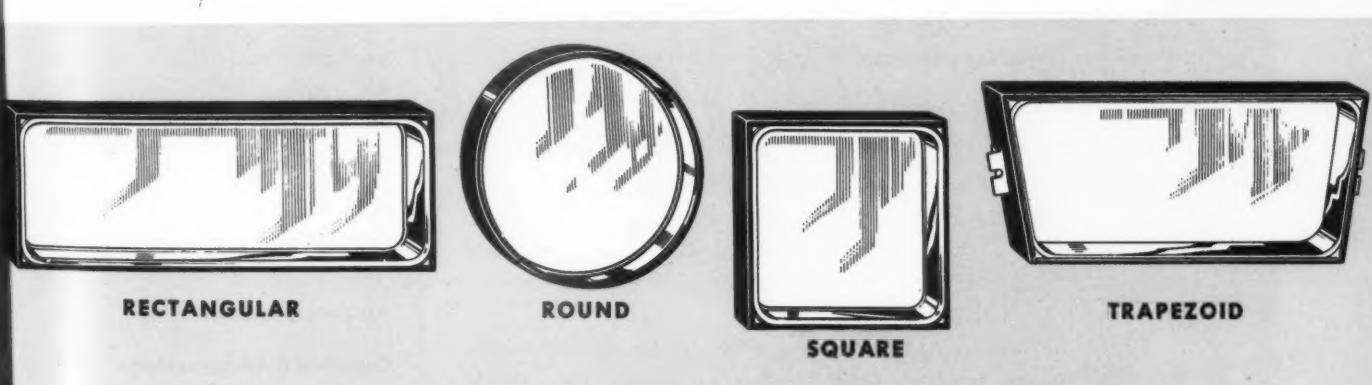
Range manufacturers are well aware of the increase in demand for "visible baking" during recent years. The PERMA-VIEW oven door window is the most logical and most economical answer to this demand.



In just eight short years, the PERMA-VIEW window has become the accepted standard in the range industry. Today 80 of the leading range manufacturers are using the PERMA-VIEW window. For both free-standing ranges and built-in oven units "the window you can see through always" is the accepted standard.

As a practical, economical and effective component, PERMA-VIEW can be your best sales feature. Be sure you take advantage of this sales feature in your new models — either free-standing or built-in.

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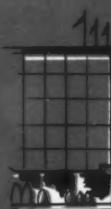
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Resistance to acids and alkalis make this series of frits ideal for such products as home laundry equipment. Other uses include refrigerator liners, range parts, architectural panels, fluorescent reflectors, etc. While 1400° low temperature frits are not advisable for all uses, a study of their characteristics and performance may suggest advantages for use in your operation. Write today for reprint of an article on the subject, especially prepared by Pemco's Service Department.

RESEARCH AND A FLAME

PEMCO

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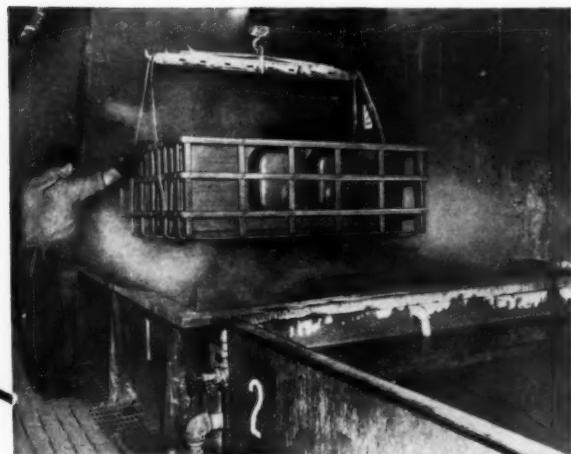
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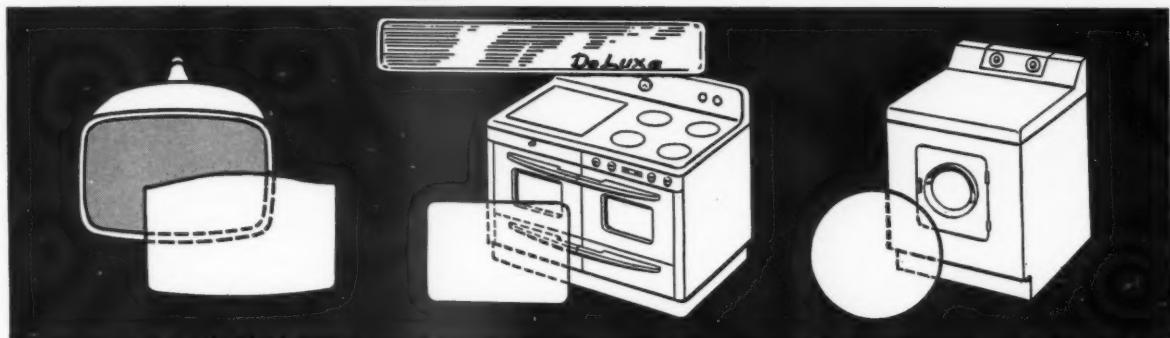
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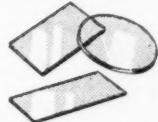
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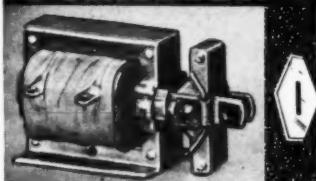
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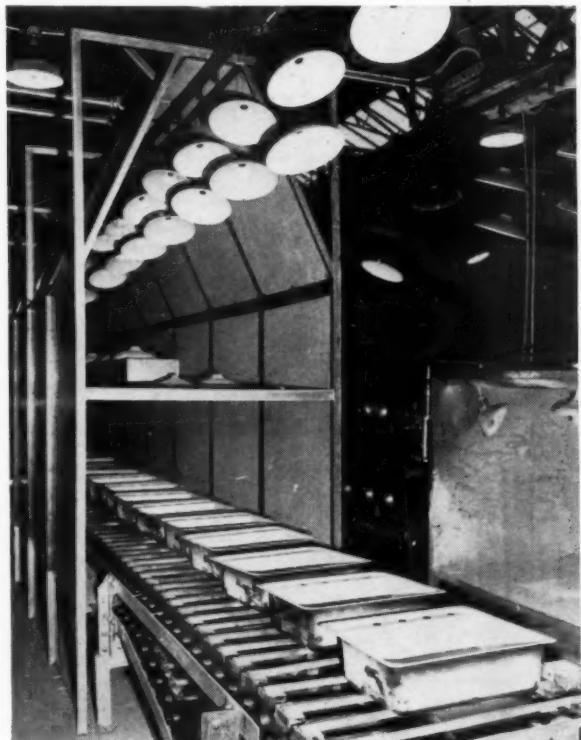
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(Note: All magnesium processes mentioned above are approved for use by Magnesium Department, Dow Chemical Co.)

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or Metal
Conditioning
Problems—
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- coating
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MPM

WITH A DEVILBISS PAINT HEATER



DEVILBISS HOT-WATER PRINCIPLE



Diagram shows how the DeVilbiss hot-spray method uses water as a temperature equalizer. The heating action of forced hot-water circulation is fast, yet gentle and safe. Uniform paint temperatures are maintained without "hot spots" or the danger of thermal override. Paint can never be overheated to cause scorching, hardening, or discoloration.

Circulating hot water heats paint gently, quickly, and keeps it hot all the way to the gun



Paints, like certain foods, scorch quickly—can't stand an intense, direct-heat.

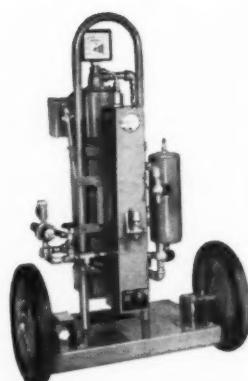
The DeVilbiss Paint Heater with its water jacket, like your double boiler, is the only method that applies a gentle heat to eliminate "hot spots." There is no possibility of overheating or hardening paint, because the water serves as a temperature equalizer between the heat source and the paint.

An exclusive heat-jacketed hose, with circulating hot water, maintains the

proper temperature of the paint right up to the spray gun.

Only water is recirculated in a DeVilbiss system—there is no need for repeated circulation of paint in order to reheat it.

For hot spray at its best, check the yellow pages of the phone book for your DeVilbiss representative and ask for a demonstration of the DeVilbiss Paint Heater—the safe, sure way to improve painting quality, reduce overspray, apply heavier coats, and make the job of application easier.



DeVilbiss Portable Paint Heater lets you take hot spray to the job. Hooks into any conventional spray outfit. Units for production-line installation also available.

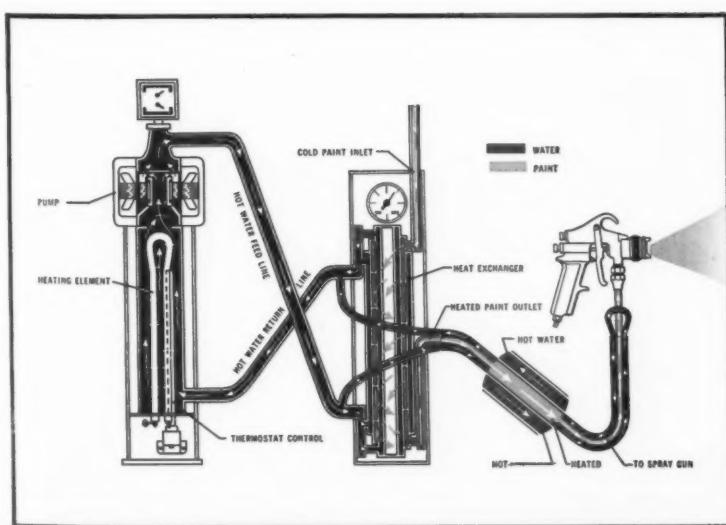
IF YOU CAN'T SCORCH PAINT!



DIRECT-HEAT PRINCIPLE



Exposing paint directly to the metal heating medium—as shown in diagram representing ordinary paint heaters—results in higher temperatures at the point of heat transfer. And although the heating element may be thermostatically controlled, when the paint stops circulating, thermal override often causes scorched, hardened or discolored material.



Water is heated in compact electric unit (left), and circulated through heat exchanger (center). Paint rapidly reaches a controlled temperature in the exchanger, as it spirals through a passage surrounded by hot water. Water-jacketed hose (right) keeps the paint hot as it flows up to the gun.

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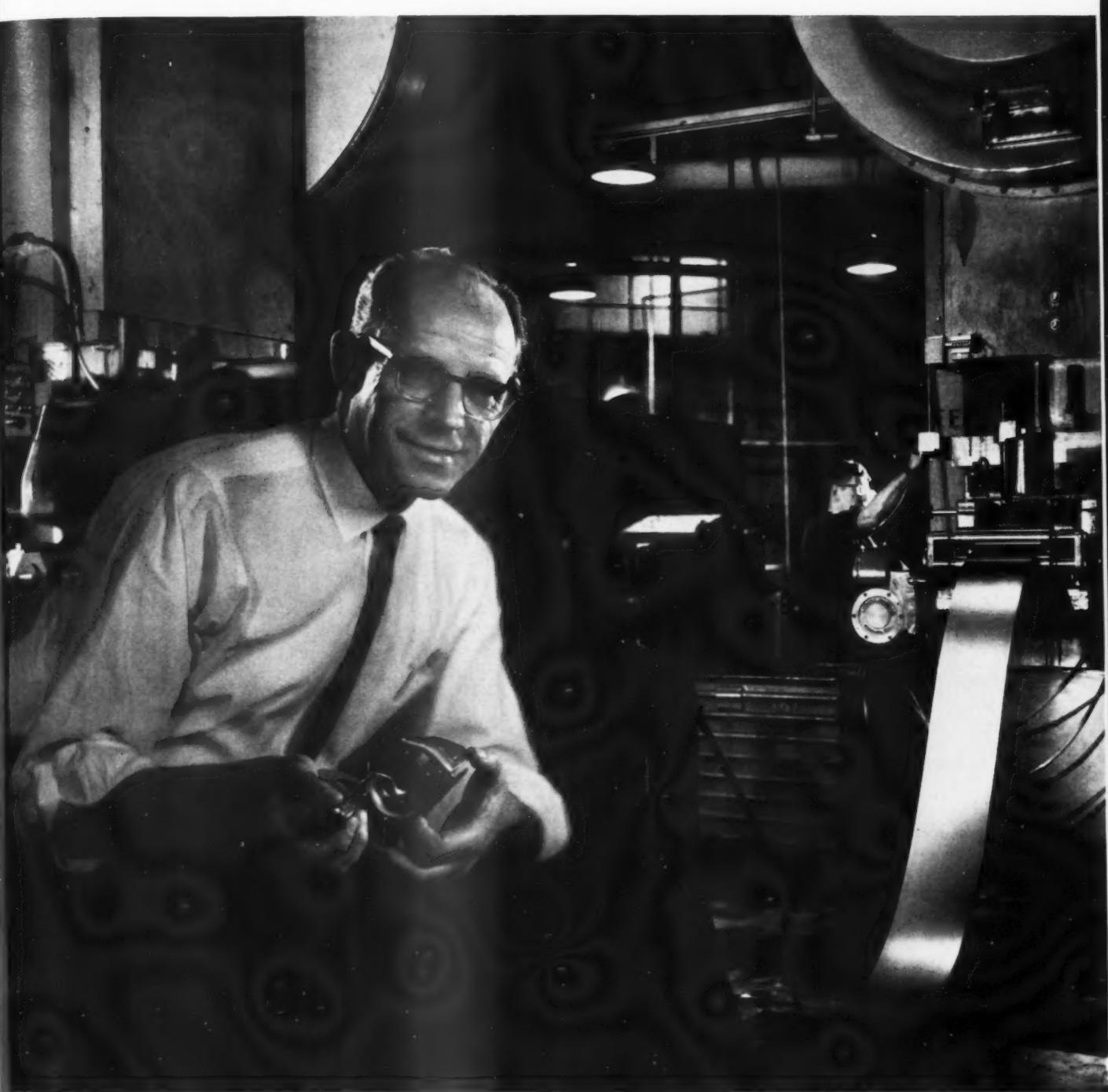
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—LESTER FIRST—DIRECTOR OF QUALITY CONTROL

"Quality control is important to Whirlpool, and to maintain the highest standards we must begin with quality materials," says Lester First, Director of Quality Control at Whirlpool's Clyde, Ohio plant.

"Through constant checking I find that Sharon is one of our suppliers we can rely on for consistently good steel right to our specs," Mr. First continues.

Leading appliance makers, like Whirlpool, know there's no substitute for quality steel. For quality steel there's nothing finer than that produced in the mills of the *Sharon Steel Corporation*, Sharon, Pa.



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Cold Rolled Sheets work better*

product: VACUUM CLEANER TANK PART



problem:

produce a handsome vacuum cleaner tank of the upright type, designed in a silhouette for consumer eye appeal. The operation to be a single deep draw. Because of the depth of the draw and the severe shaping, a sizeable amount of breakage could result. The required draw also produced stretcher strains in the shaped tank which handicapped later finishing operations.



solution:

quality standards were met and the problem overcome by "job-tailored" Inland Cold Rolled, Drawing Quality, Aluminum Killed Steel. This steel, specifically recommended for the job, successfully took the deep draw and pattern formation required. Stretcher strains were eliminated and an excellent surface obtained for all subsequent finishing.

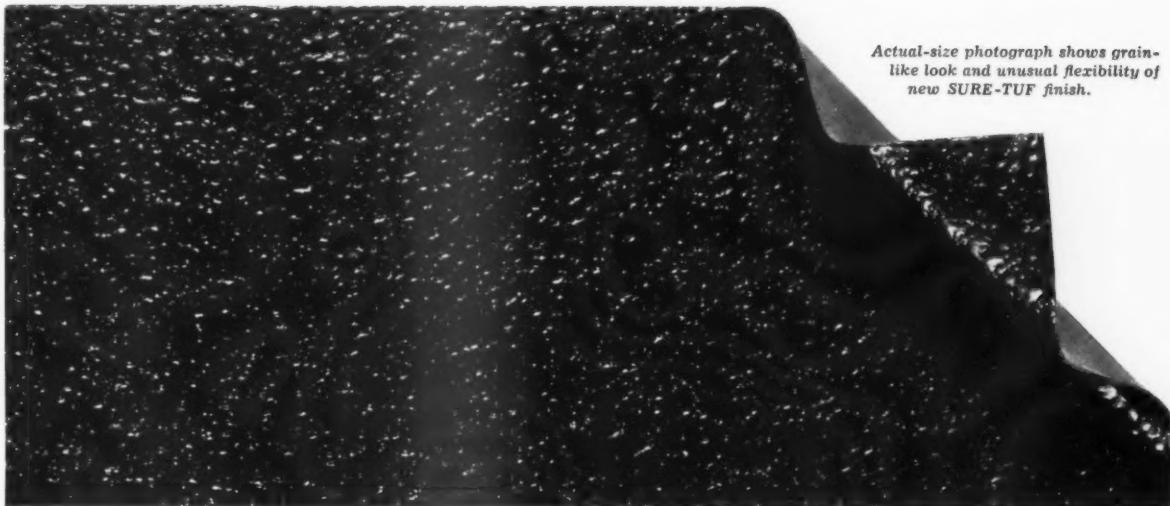
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*Cold
Rolled
Sheets*

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Actual-size photograph shows grain-like look and unusual flexibility of new SURE-TUF finish.

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...bakes on, dries tough, won't crack, gives metal products a "new look" that builds sales

The close-up photograph here only gives you a hint of how new Lowe Brothers SURE-TUF really looks. You need actual samples of black and colors to judge the rich appearance, the "leather-grain" depth, the unusual durability and bendability of

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MPM-5

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EVERY HIGH-EFFICIENCY production line has its own special set of earmarks. A practiced observer passing along one of these lines soon notes the special features which makes it possible for this particular line to turn out more units per man hour than similar more conventional lines producing similar products.

The water heater tank fabrication line at the Los Angeles plant of Republic-Odin Appliance Corporation has several of these specialized earmarks. First is its extreme compactness, both as to overall length and machine arrangement within the line. Line shortness eliminates all long distance handling between the various production operations, and machine arrangement permits an easy and logical flow of parts from one production operation to the next.

A second feature is production line balance. This balance is carefully coordinated with the maximum production rate of all single-machine operations along the line. When a single machine can produce enough work to keep two or three machines busy at another work station, the two or three machines are there and ready to go when the parts arrive. This eliminates all line bottlenecks and minimizes any pileup of in-process work along the line.

The outstanding feature of this particular Republic-Odin production line is



One of the two automatic spud welders used in welding spuds in tank bodies and tops. Operation is fully automatic, performed in a single welding pass, and results in a minimum of spud welding seam leaks.

EXCLUSIVE MPM PHOTO

Water heater tank line features automatic welding

AN MPM STAFF FEATURE

the comprehensive employment of automatic welding machines. While most water heater tank production lines employ automatic welding for the tank side seam, at Republic-Odin one specialized spud welder is used for welding the spuds in the top of the tank, and another, tooled somewhat differently, is used for welding the spuds in the tank sides. Both machines employ automatic submerged arc welding heads mounted on rotating beams which complete the weld around a spud in a single-pass revolution. Leakage rejects from these automatic welders are almost nil. And

finally, just now going into production, a company-designed automatic welding machine is being used for welding the flues to the tank bottoms. Here again the automatic weld is accomplished in a single rotary pass, and rejects, despite the newness of the machine, have reached an alltime low.

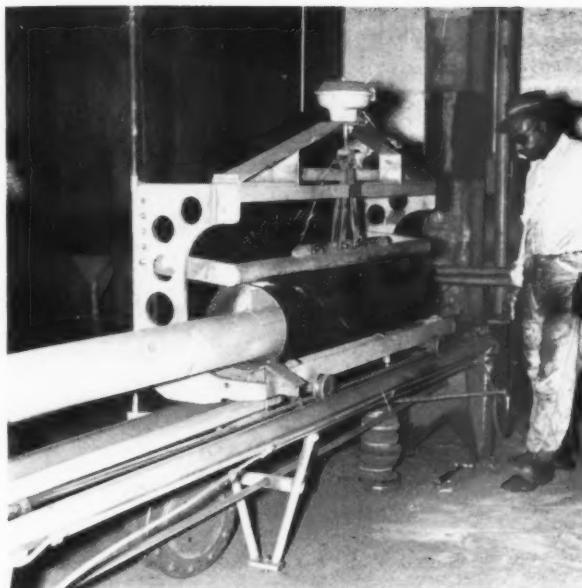
Five hundred tanks per eight hours from twelve-man line

The net result of this compact line layout, line balance, and automatic welding facilities, is that a relatively small production line has a production

potential of 500 water heater tanks in an eight-hour shift, and with only twelve employees working along the line.

It should be pointed out that Republic-Odin officials had very favorable circumstances under which to install their current water heater tank production line. In August, 1958, the company moved from its Huntington Park, California, location into its new Los Angeles plant. It was thus possible to "start from scratch," so to speak, in laying out and tooling the new line, without existing facilities standing in the way.

The new plant has approximately 80-



Interior of body weld seam is ground flush with the body proper in this view. Operation is two-pass, with tank automatically carried forth and back across wheel.



After heads are pressed into heater tank bodies, they are lap welded in place with this automatic submerged arc welding machine. Later, a fillet weld is applied.

EXCLUSIVE MPM PHOTOS

000 sq. ft. of production space under roof, with a similar amount of unroofed storage space at the rear. An average of 75 employees work along the water heater tank production line, the jacket production line, in the enameling department, and along the final assembly and shipping lines. In addition to producing a standardized line of commercial water heaters, custom-built water heaters are also produced, but in a sep-

arate department from the commercial line.

Raw material for the water heater tanks, ordered in pre-cut sizes to minimize shearing waste, arrives at the plant by truck, and is stored in a shed at the rear, adjacent to the shearing department and just inside the building proper. In the shearing department, the sheet stock for the tank bodies is accurately trimmed to size, and blanks for the

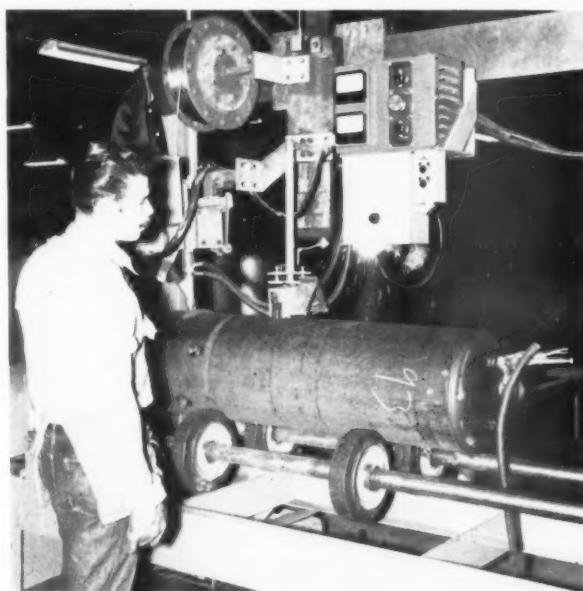
tank bottoms and tops are produced on a 500-ton press. Jacket stock is also sheared in this area.

Welding procedure on tank bodies

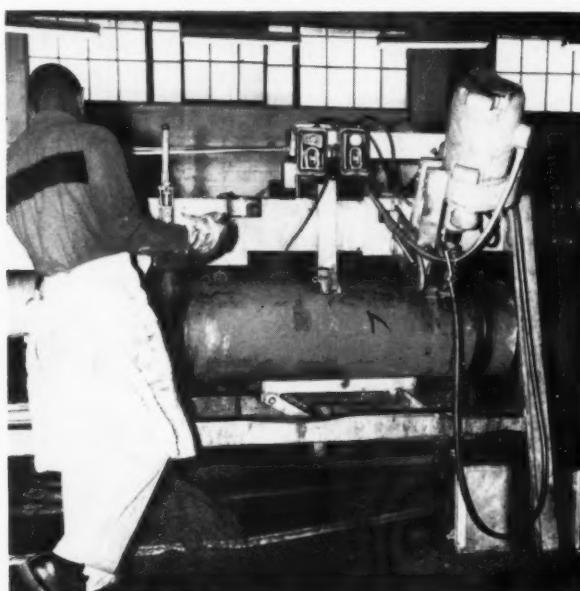
Two fabrication lines branch away from the shearing department, one for tank bodies, the other for jackets and miscellaneous parts. The first operation on the body line is the piercing of all

to Page 73 →

After the tank bodies have been glass lined and enameled, the bottom and flue assemblies are welded in place on a battery of two automatic submerged arc welders.



Here, an automatic tapping machine is tapping all the spuds on one tank in a single operation. After this, the completed tanks join jackets and other parts.



the **PRESSTITE GUIDE** to Sealing Compounds for the REFRIGERATION INDUSTRY

the MOST COMPLETE LINE of Sealing and Caulking Compounds in America

Product	Uses	Characteristics
Wood Sealers	Treating porous boards to minimize absorption of moisture.	Black. In brush, dip or spray consistencies. Excellent water and water vapor resistance. Mild odor. Suitable for use under wide temperature range. Little or no shrinkage.
Sound Deadeners & Metal Coatings	Minimizing sound vibrations. Coating and sealing metal enclosures exposed to or immersed in water, as air conditioners, cooling towers, etc.	Black, brown and dark red. Little or no odor. All water resistant. Some acid, base, fire, heat and shock resist. Nil or slight shrinkage. Low thermal conductivity.
Rubber Cements	General purpose adhesion, as for adhering insulation or deadener pads. Especially good for fiber-glass pads.	Excellent water resistance. Superior bonding properties. Service temp. range 0°F. to 175°F.
Elastic Compounds — Extrusions	Sealing seams on refrigerators, air conditioners, walk-ins, etc. Helps to keep out moisture or give an air seal where needed.	Tapes or round extrusions. Non-oxidizing. Excellent adhesion. Non-shrinking. Low heat and electrical conductivity. Will not affect most plastics, rubbers or lacquers.
Elastic Compounds — Grommets	Sealing areas where tubes and wire go through partitions, etc.	Available in grommets, special shapes. In black, green, aluminum-grey. High water resistance. Low thermal conductivity. Excellent adhesion. No shrinkage.
Cork Tapes	Wrapping and insulating cold refrigerant lines.	Excellent water resistance, adhesion, cohesion and insulation. Non-oxidizing, no unpleasant odor. Good flexibility.
Plastisols	Heat curing sealers for sealing outer cabinets of refrigerators and freezers, sealing spot-welded seams, providing smooth fillet on liners.	Little shrinkage. Good adhesion. Non-toxic. Low heat and electric conductivity. Non-oxidizing. Good resistance to water, acids, bases and oils.
Pumpable Mastic Sealers (White or Black)	Wherever a permanently soft mastic sealer is required, as for sealing breaker strips, fasteners, name plates.	Excellent water resistance, non-oxidizing, non-staining, non-corrosive. Little or no slump or flow at elevated temps., will not get brittle below freezing. Will not soften enamel, craze or etch most plastics. Non-shrinking.
Permagums (Brown or White)	Sealing seams of all kinds in refrigerating equipment.	In bulk or extrusions. Non-hardening. Mild odor, non-contaminating. Water resistant, good adhesion. Easily handled and molded. High cohesive strength. Will not swell most rubbers. Flexible at low temperatures.
Plastic Sealer Tapes	Sealing seams, especially under extreme temperature variations.	Excellent water resistance. Non-staining, non-bleeding, non-corrosive. Extremely tacky, do not cold flow at elevated temperatures. High elongation and cohesion, including many release-type surfaces as glass, polyethylene, etc.
Wat-R-Bar	Sealing in areas subject to frequent freeze-thaw cycling.	Permanently plastic, in bulk or extrusions. Excellent resistance to deterioration caused by freeze-thaw cycling. Good adhesion, water-resistance. Non-shrinking. Won't stain or soften lacquer, swell most rubbers or plastics. Will not flow at 400°F.
Presst-O-Cel	Insulating refrigerant lines. Controls condensation, sweating, and provides vapor barrier.	Closed-cell sponge tubing. Excellent water and air-tightness. Resists oil, acid, alkali. High insulation factor, non-inflammable. Lightweight. Long life. Resistant to rodents, vermin and fungi.
Thermal Mastics	For implementing heat transfer from tubing to liner on cold wall evaporators.	Non-volatile, non-shrinking. Non-contaminating. Long shelf life. Good adhesion, excellent water resistance. Applied by trowel, caulk or flow gun, spray or splatter gun.

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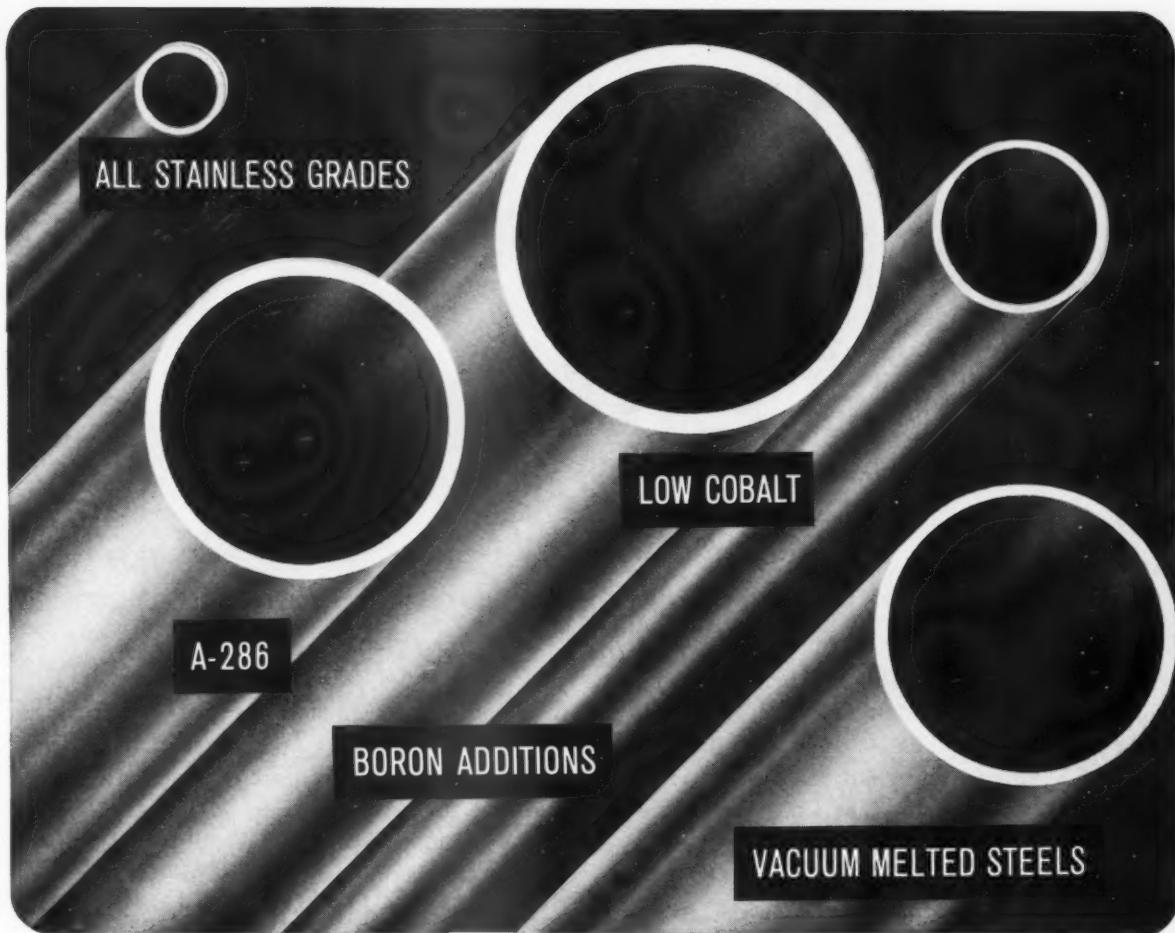
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(Above) — Solution is applied from sides and bottom by V-type jet nozzles. Parts are positioned so that they receive full action of sprays, and permit proper draining in the next section.

(Left) — Man in charge of loading and unloading conveyor works near the center of the finishing operation. (See diagram next page.) After raw parts are suspended on monorail conveyor, they move overhead to an aisle and continue for approximately 35 feet before entering two-station spray washer.

new organic finishing line features a dual-purpose oven, latest water wash spray booth, compact two-stage metal preparation, and light conveying system

A finishing line designed for two-man operation

AN MPM STAFF FEATURE

EXCLUSIVE MPM PHOTOS

MPM
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FEATURE

A well-planned finishing system usually pays in good results and trouble-free operation. Such a system is carefully engineered to take the utmost advantage of the equipment, with full consideration of the job to be done.

Just such a system has recently been put into operation at Triple A Specialty Co., Chicago, manufacturers of battery chargers and a full line of automotive electrical equipment. These metal prod-

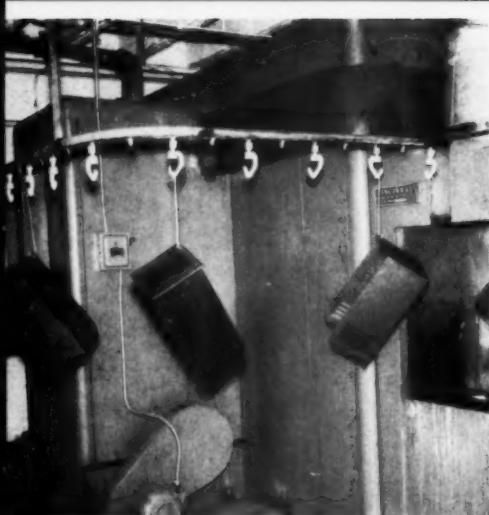
ucts ranging in size up to 15 by 15 inches in cross section, and 36 inches in height, need an especially-durable finish to withstand battery acid, rough usage, and unusual exposure conditions. Furthermore, these requirements must be met with a one coat finish. It is easy to see that metal preparation, the choice of paint, application, baking, and handling had to be carefully planned to meet these requirements. Another important factor was that the cost of operation had to be kept at a minimum. The result of this planning is an up-

to-date, efficient organic paint finishing operation at Triple A. Just two men are needed to handle the work load for all finishing, at an annual production rate of 40,000 cabinets per year. An automatic spray cleaning-phosphating machine is built wall-to-wall against the combination dry-off and paint bake oven. This arrangement conserves heat as well as integrating cleaning and baking. It also has kept the overhead conveying system from being unnecessarily complicated.

Latest type spray booth

One of the latest type water wash spray booths, measuring 10 feet wide, was installed at a 45° angle to the flow of the parts so that conveyor turns and distance traveled could be kept at a minimum. The conveyor is a compact enclosed type with four-position swivel hooks to enable in-transit rotation while painting.

Since metal preparation and paint baking are run on an automatic basis, only two men are needed for the entire finishing operation. One does all the

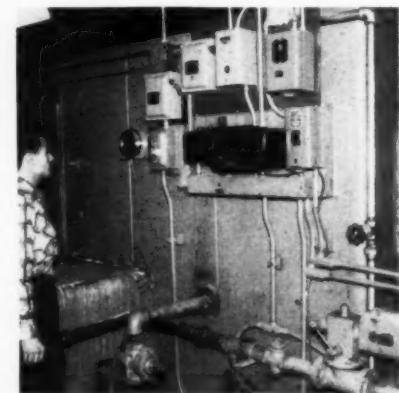


for quality finishing at the lowest possible cost.

Two-cycle wash and rinse

After the raw parts are suspended on the monorail conveyor, they move overhead to an aisle and continue for a distance of about 35 feet before they enter the two-station spray washer. They pass through a three-foot approach and then enter the four-foot long combination

a spark-ignited pilot and a manual starter. The burner is controlled by a proportional-type electronic control to the desired temperature for the 600-gallon capacity wash-phosphating tank. A centrifugal-type pump with a stainless steel shaft keeps the solution circulating at a rate of 200 gallons per minute. A similar pump arrangement is used for the 150° F. water rinse tank of 445 gallon capacity, except that the rate of cir-



EXCLUSIVE MPM PHOTOS

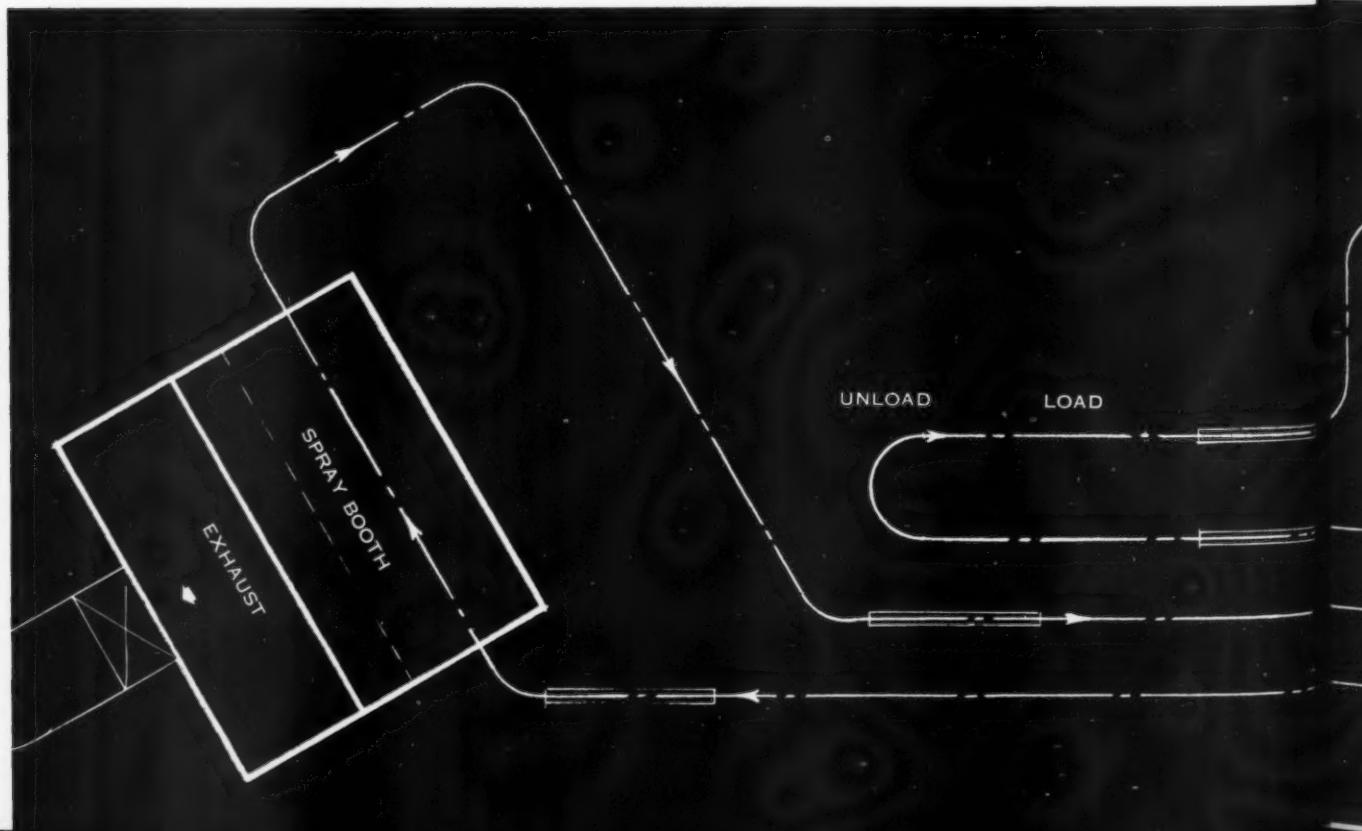
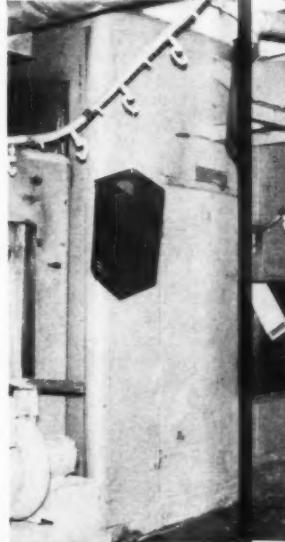
cleaning and phosphating cycle. This solution is applied from the sides and the bottom by V-type jet nozzles. The parts are positioned so that they receive the full action of the sprays and permit proper draining in the next four and a half-foot section.

The cleaning-phosphating solution is maintained at 140° F. \pm 5° F. by a single gas-fired burner equipped with

An overall view of the combination metal preparation, dry-off, and paint bake unit. The conveyor at the left delivers parts to metal preparation, the

(Left) — Cleaning-phosphating solution is maintained at approximately 140° F. by a single gas-fired burner equipped with a spark-ignited pilot and a manual starter. Burner is controlled by a proportional-type electronic control.

(Upper left) — Upon leaving the wash and rinse machine, parts travel around back side of oven to entrance for dry-off at 350° F. The length of passage through oven is 17 feet, allowing a dry-off period of four minutes.



culation is maintained at 115 gallons per minute. The temperature of the rinse is held at the required level by the same type of burner and control apparatus used for the cleaning-phosphating solution.

After draining, following cleaning and phosphating, the parts enter a two-foot water rinse section with the same type spray nozzles and arrangement as the first cycle. Then the parts pass through a

three-foot drain cycle prior to leaving metal preparation.

Dry and bake at same temperature

Upon leaving the wash and rinse machine, the parts travel around the back side of the oven to the entrance (see diagram) for dry-off at 350° F. The length of passage through the oven is 17 feet so that, at a conveyor speed of four feet per minute, the dry-off takes about

two conveyor lines in the middle are for baking, and the conveyor line next to the wall is coming from the dry-off oven.

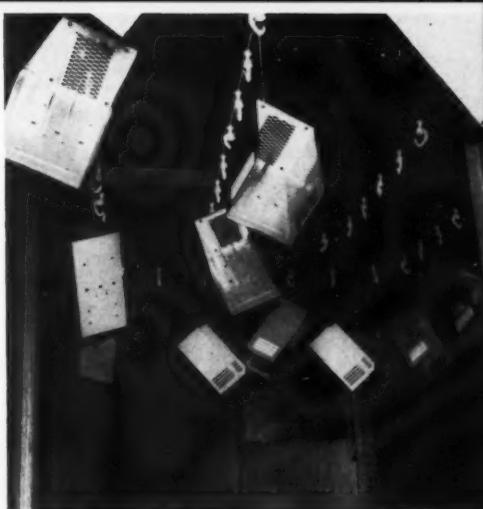


(Right) — Changing from one color paint to another is accomplished by switching spray hoses and guns to the desired paint delivery pipe, stop pumping one material, and start pumping another. Application is similar to other systems where standard guns and unheated paint are used.

(Upper right) — Finish is baked for 16 minutes at 350° F. in a four-pass or double-U path through the bake section of the oven. Bake portion of oven is located between cleaning and dry-off.

four minutes. The tunnel of the dry-off section of the oven, as well as the paint bake section, measures 10 feet 8 inches wide by 8 feet 6 inches high. The same temperature of 350° F. is used for baking the paint.

The oven is fired by 1,000-Btu gas by an atmospheric-type, 750,000-Btu capacity burner, equipped with a constant pilot and flame tube for maximum



safety and control.

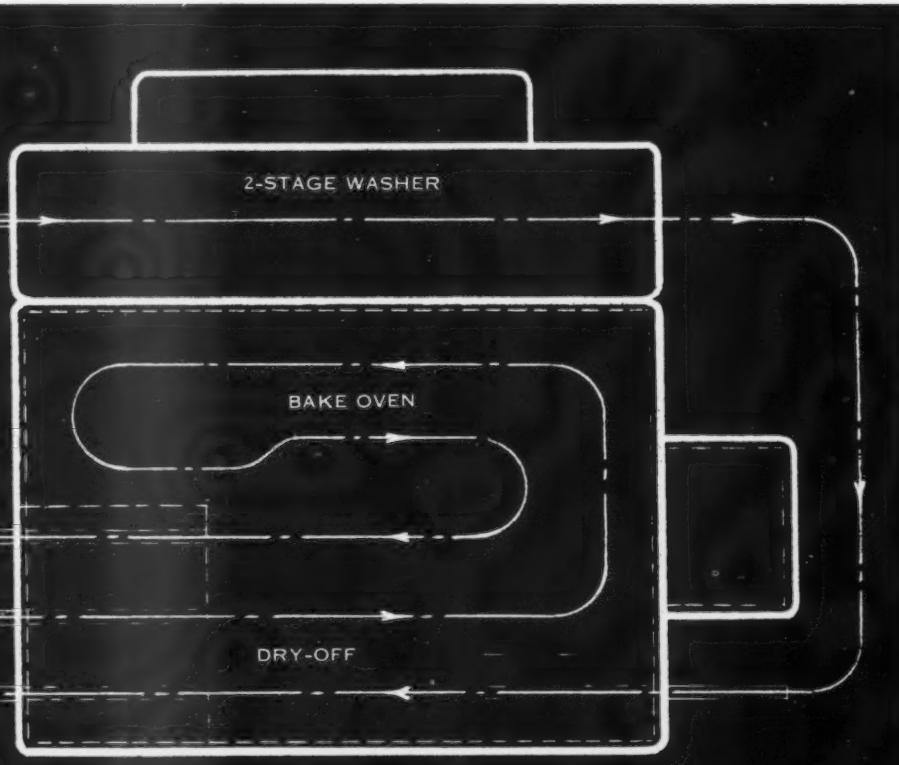
The distance from the exit of the dry-off section of the oven to the spray booth was originally calculated so that the temperature of the parts would be just right for painting.

Paint pumped up to finishing

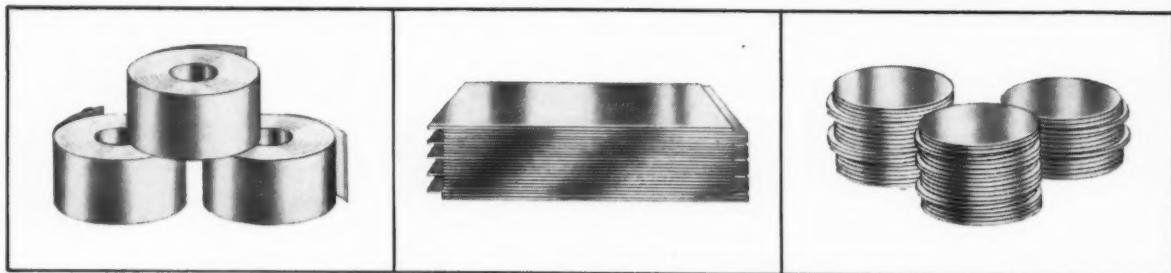
For maximum safety, and also to provide a convenient location for storing and mixing the paint, a masonry-walled room equipped with a steel fire door was specified in the original plans. In addition, individual electrical ground connections were installed for each 55-gallon drum of paint in the room. This precaution virtually eliminates danger from static electricity.

The paint storage room is located on the ground level floor, one floor below to Page 90 →

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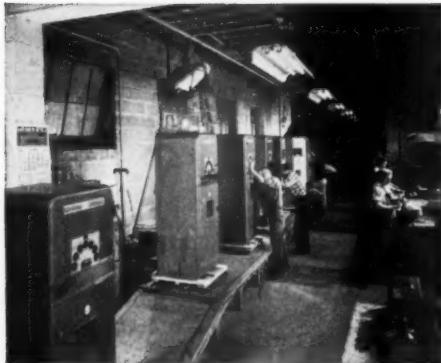


Metal Products Manufacturing

SPECIAL SECTION
AUTOMATIC MERCHANDISING
INDUSTRY

SERVING THE
Appliance AND
FABRICATED METAL PRODUCTS INDUSTRY

FROM RAW METAL TO FINISHED PRODUCT



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Editor's Note:

Our editors feel that this special section devoted to the Automatic Merchandising Equipment Industry contains material that should be of interest to every fabricator and producer of metal products.

In the development of this special section, the editors of MPM made contact with every manufacturer of automatic merchandising equipment, counselled with the top executives of the National Automatic Merchandising Association, and sent editors and photographers into the field to secure feature material for this section.

Due to the number of fine products produced, it isn't possible to illustrate products from each manufacturer in this single issue, or to give individual credit to the many executives and plant men who cooperated in connection with this feature. Our editors have selected from the material available, and will continue to show outstanding examples of equipment in later issues as space permits.

The editors of MPM desire in this note to thank all those who extended their cooperation in connection with the development of this special section.

This special 28-page Automatic Merchandising section forms the center of a 102-page May, 1959 issue of MPM magazine.
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THE AUTOMATIC MERCHANDISING INDUSTRY

THIS MARKS THE SECOND TIME that the editors of MPM have saluted the automatic merchandising equipment manufacturers and the Automatic Merchandising Industry. Our editors feel that this special attention is warranted because of the continuing rapid expansion of the industry, and because of the increasingly-important part that this industry is playing in our overall economy.

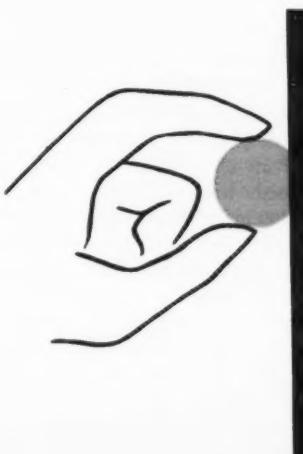
There are 150 manufacturers producing the many different types of automatic merchandising equipment. Machines have been developed to the commercial stage that will brew fresh coffee and automatically dump the stale brew at regular intervals; that will cook hot foods, maintain them at eating temperature, and restore them to refrigeration if not consumed; that will vend automatically perishable commodities such as milk, ice cream and other dairy products; and that will enable a customer to choose by the push of a button his own selection of the contents of a sandwich, etc.

It would be extremely difficult to anticipate all the possibilities for automatic merchandising within the next few years. Currently, equipment manufacturers and suppliers are spending millions annually on the design, engineering, and development of new types of machines and components.

To provide some idea of the present size of the automatic merchandising equipment industry, in 1957 there were 130 companies that reported the production and shipment of 464,284 units, valued at \$104,067,000. Figures for 1958 are not as yet available.

In today's new buildings, it is not unusual for architects to plan specific areas for the location of automatic merchandising equipment. In industry, automatic merchandising continues to play an increasingly-important role in in-plant feeding.

MPM, for the second year in a row, salutes the ingenuity and progressiveness of the engineers and plant men (both in the vending machine plants and the plants of component manufacturers) who have made it possible for the industry to reach its present stature, and who are making its continued, rapid progress a reality.



The "Man behind the Machine"

by C. S. Darling • EXECUTIVE DIRECTOR, NATIONAL AUTOMATIC MERCHANDISING ASSOCIATION



EVERY DAY OF THE YEAR, day or night, Americans are buying cigarettes, candy, soft drinks, coffee, sandwiches, ice cream, tea, and dozens of other commodities simply by dropping a coin into a vending machine.

Machines are constantly advanced and improved by the alert manufacturers who serve automatic merchandising. Even since Metal Products Manufacturing's May, 1958 Special Section, new inventions have added to the variety and convenience of the vending machine customer. Yet, all too often even the daily user of vending machines is unaware of the most important cog in the machine—the man "behind" the machine.

For machines must be purchased, machines must be placed in the most productive locations, machines must be serviced, machines must be cleaned, machines must be repaired, machines must pay taxes, and machines must be replaced.

To most users of vending machines the identity, and therefore the role, of the automatic merchandising specialist is a deep, dark secret. Few know, for instance, that most vending machines on location are owned and operated by a vending specialist who is in every sense of the word a retailing specialist.

According to the best estimates there are approximately 5,000 vending "operators" in business today.

Competition among them is usually no less lively than between drug stores or supermarkets. The basic objective is to place vending machines into the most productive locations, be they in public places (such as bus and airline terminals), in industrial locations, or in schools or offices.

The automatic merchandiser must know which machines will do the most efficient job for him, which will be best suited to particular locations, what their capacity should be, which products will sell best, and where in the particular building they will attract the greatest traffic.

He must arrive at a satisfactory arrangement with the location "owner," on a commission basis, a rental basis, or often only on the basis of rendering a valuable service (such as in industrial plants).

The vending specialist must hire personnel who will service and stock the machines, usually on a daily basis. He must keep accurate records of all sales (often by the hour), for on accurate records depends his judgment of moving or replacing machines and of changing his merchandising techniques. He must maintain repair shops and hire skilled mechanics, for vending machines are as fickle as automobiles and, nowadays, often almost as complicated.

He must be a master accountant and financial expert, for today's advanced machines range in cost to \$1,500 each, and financing, depreciation, and replacement are part and parcel of his profit picture.

He must know his products for, with the growing importance of merchandising through machines, a variety of vend-

ible brands has sprung up. Alert product manufacturers offer the vending specialist a wide choice of type and size and quality in varied packaging devices. Where there were no coffee vending machines 15 years ago, for instance, there are now three major methods in coffee vending: liquid concentrate, instant, and fresh brew.

The automatic merchandiser also must be a salesman, a public relations expert, and a public-spirited citizen. For as automatic merchandising has grown, so have the public demands upon it. In industrial locations he must be able to sell the advantages and (often) cost-saving aspects of his service. To ever-ready tax collectors he must convincingly offer proof that as a merchandiser he is willing to pay his share of taxes, but not those which tend to discriminate against his special form of retailing. And as a local businessman he also must devote his time to the civic projects of his community.

In many cases he is still a young man who got into a young and growing business less than 15 years ago. Many of the largest automatic merchandising companies are managed by men who were still in college in the early 1940's. Approximately 90 per cent of his competitors employ fewer than ten men. Some 70 per cent employ fewer than three men. Most are small companies, yet the largest last year grossed in excess of \$100 million.

His average net profit in 1957 was a shade over 3 per cent.

Most people, only thinking of the money they drop into his machines, think it's all clear profit. They forget product cost, machine replacement, servicemen salaries, insurance, rent, taxes, and all the other normal overhead costs.

With the advent of dollar bill changers in the near future, further development of machines to serve food, vend groceries, and other perhaps yet-to-be-invented applications, automatic merchandising looks for an ever growing importance as a service industry.

Before all these forecasts can become a reality, new products and machines must be proven on location, someone must invest the capital to buy them, to experiment, to discover and help eliminate the "bugs" which come with all new machinery.

These risks will be taken by the vending machine "operator." Because he is young, aggressive, and merchandising-minded, he will want to try everything the manufacturer has to offer. Also, the forces of competition from his fellows will compel him to be alert to new developments, provided he can utilize them on a profitable basis.

He is truly the oft-forgotten man of automatic merchandising—the "Man behind the Machine."

Makes new markets

by *William S. Fishman* • PRESIDENT, NATIONAL AUTOMATIC MERCHANDISING ASSOCIATION



WE SELL SERVICE. The role of the automatic merchandiser has become an increasingly important segment of retailing in our American economy. Ours is service at the drop of a coin. Automatic retailing provides refreshment, food, and services twenty-four hours each day, seven days each week. Vending sells the products of many of America's greatest businesses at times and places where these products could never have been sold in any other manner. Automatic merchandising makes new markets. Our industry increases sales and consumption of many, many types of products. Thus we contribute very substantially to the American economy, create employment for thousands upon thousands of workers, and provide markets for goods and materials necessary to fabricate our automatic merchandising machines.

Automatic selling is not an inexpensive type of retailing. For the most part, the cost per unit sale of selling through vending machines is somewhat higher. It is unfair to compare our selling costs on cigarettes, for example, with the cost of selling cigarettes in grocery supermarkets where cigarette sales are a minor part of the total store volume.

Experience has demonstrated that, to date, only certain types of products lend themselves to merchandising through vending; namely, products which are consumed by both sexes, in nearly all age groups, and by all strata of wage earners. Edible products which are eaten often, for example, are highest volume items sold through vending. Many firms are examining the possibilities of distributing their products through vending. Our variety of vendible goods is increasing daily.

Automatic merchandising is stimulating research and development of new food packaging techniques. Automatic feeding requires packages which are durable, leak-proof, and flexible, both as packages and as eating utensils. The new packaging being developed for automatic food service will unquestionably be of great benefit when applied to many other types of food retailing.

National branded merchandise is a direct beneficiary of automatic retailing. Vending machines which offer nationally-known products transact more sales. Vice versa, national branded goods offered through vending machines enjoy greater distribution and increased point-of-purchase advertising.

Our industry has caused many suppliers of vendible products to extend and expand their research and quality control programs. For example, when vending machines which brew fresh coffee in small batches from ground coffee beans instead of from instant coffees were first introduced, coffee roasters were confronted with many new problems of maintaining consistent roast and grind specifications. Almost every coffee roaster will testify to the fact that, because of the rigid specifications required for coffee used in fresh-brew machines, their laboratories have learned many facts about coffee never known before. These facts have been carried over into the rest of their roasting and distributing operations with the result that

the quality of coffee sold to restaurants and other outlets is more uniform and of better quality.

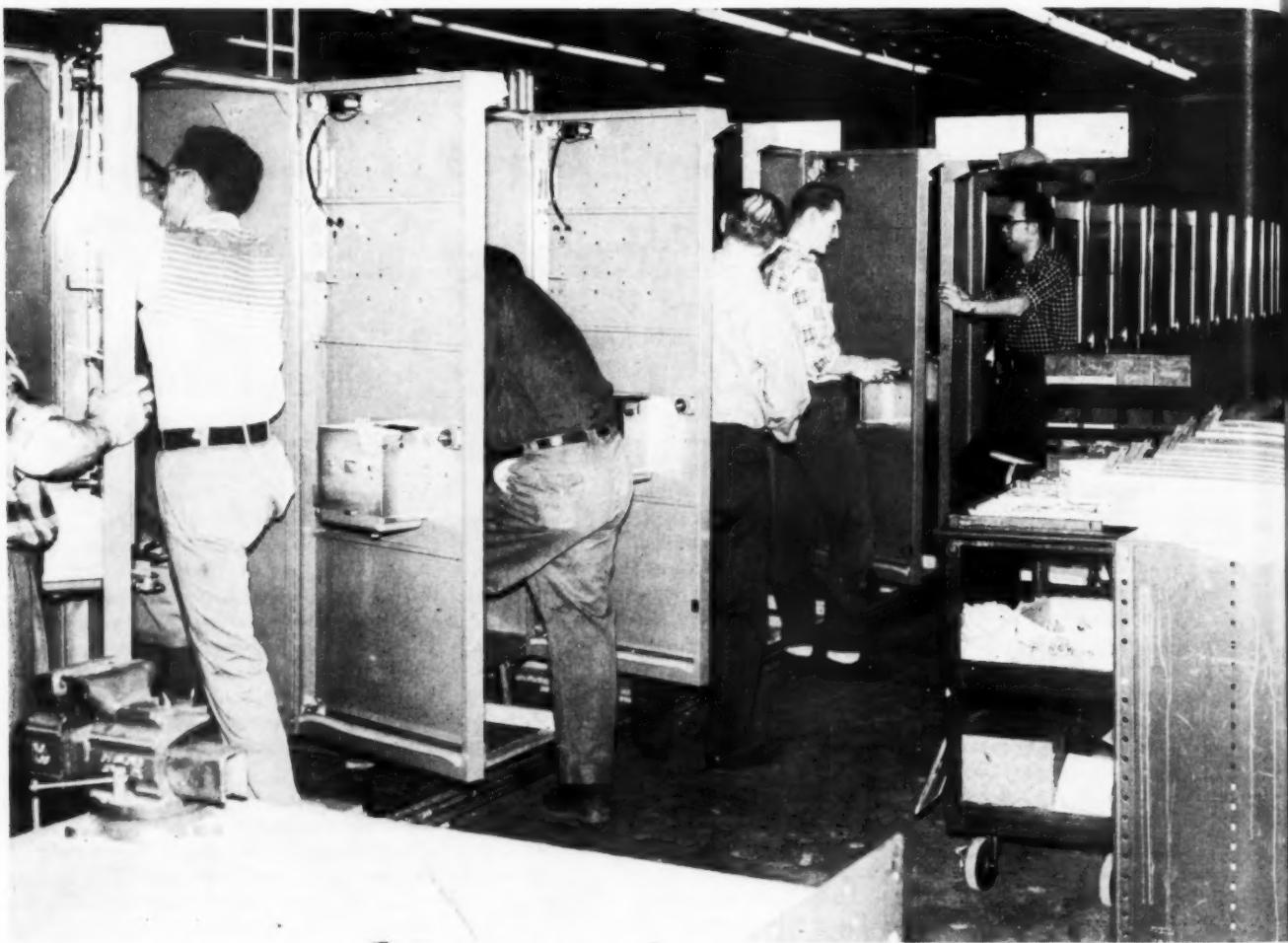
The role of the automatic merchandiser, commonly known as a vending machine operator, is extremely important. Almost anyone can purchase vending machines and vendible products but only the specialist, the operator, can guarantee top quality performance. Machines and merchandise are no better nor worse than the men who operate the machines. Our industry and its trade association, The National Automatic Merchandising Association, represent a tremendous pool of knowledge and know-how. We have learned through costly experience which types of machines should be installed in each type of location; which type of merchandise should be offered; what the selling prices should be; and how often the machines should be serviced. Our thousands of employees also have the ability and knowledge to maintain and repair machines.

Another very important contribution by the automatic merchandiser to the industry is assistance in the development of new types of machines to vend more types of products faster and better. Many of our new machines were actually developed by operators who modified existing machines to do more jobs.

There is a most fortunate harmonious working relationship between machine operators and machine manufacturers whereby each benefits from the pioneering and experience of the other for the benefit of all segments of our industry. The National Automatic Merchandising Association is proud of its twenty-three years. We have grown from a small group of four or five firms to a membership of approximately fifteen hundred. Our association is unique in that it represents not only automatic merchandisers who operate machines but also machine manufacturers and suppliers of products as well. Many of the best-known and largest firms in America belong to our group. All of us pool and exchange our common experience and problems for the advancement of the industry.

We are justifiably proud of our membership. Many of us are small businessmen in small communities, of the type on which our great American business system was founded and is prospering. We serve the communities in which we live not only through our vending services but even more by participation in civic affairs. We number mayors, school board members, community fund chairmen, service club leaders, religious leaders, etc., amongst our membership.

To summarize, automatic merchandising is an enthusiastic and growing industry. We are creating new jobs for more people, selling more products and, above all, serving the American consumer when and where he wants to buy.



Final assembly of the fresh brew machine. Although no two of the machines on this line might be exactly alike, final assembly is rapid and efficient.

AN MPM STAFF FEATURE

EXCLUSIVE MPM PHOTOS

MPM
EXCLUSIVE
FEATURE

A visit to the modern plant of Bert Mills Corp., St. Charles, Ill., reveals that both the product and the plant are modern in every respect. The latest model coffee vending machine, the "Coffee Bar," dispenses freshly-brewed coffee with fresh, refrigerated cream, and also vends hot chocolate and soup. These machines employ the latest control concepts, along with a number of original developments.

The five basic machines made by the company are: a fresh brew, powdered coffee, hot chocolate, and hot soup, in conventional cabinets; and a fresh brew coffee unit in an imitation filing cabinet.

The coffee machine can be built in 500 or 1,000-cup capacity models with various options such as with fresh or powdered cream, granulated or liquid sugar, and also incorporating hot chocolate and/or hot soup units.

The fresh brew coffee machine, built to look exactly like a filing cabinet, also dispenses hot water for soup, chocolate, or tea. This machine was introduced the first of this year expressly for offices that want the convenience of a vending machine without the appearance of one.

With the options available, about 20 different machines can be produced, depending on the operator's requirements. For instance, in the powdered coffee 500-cup size, the machine can be equipped to serve coffee, soup, and hot choco-

late, all in powdered form.

Some of the options available make the machines special jobs in the sense that there may be only a very few machines made just like it. On the production line there may be four different machines being assembled in the same basic model. Some will have powdered cream equipment, some liquid chocolate, some powdered chocolate, and granulated or liquid sugar. Some of the machines will be equipped to deliver strong or mild coffee, and as many as five sugar selections. These options depend mostly on the part of the country they are to be used in, since tastes for beverages differ on that basis.

December, 1958 marked the fifth year the company has occupied its well-

COMPANY ALSO CONDUCTS SERVICE SCHOOL

"Coffee Bar" assembled on four integrated lines

as many as four different machines are assembled on each line in this well-equipped plant; products incorporate latest control concepts and original developments

designed building. It was laid out with future expansion in mind and in an easily-accessible location for its employees. Fabrication and finishing are located at one end of the plant, while sub-assembly, final assembly, inspection, and shipping are located at the other end. Sub-assembly is located along the north wall of the building to provide maximum comfort in the hot months, and yet provide plenty of light. The final assembly lines and inspection stations are located in the center, and shipping and receiving are on the south side of the building.

Conduct own service school

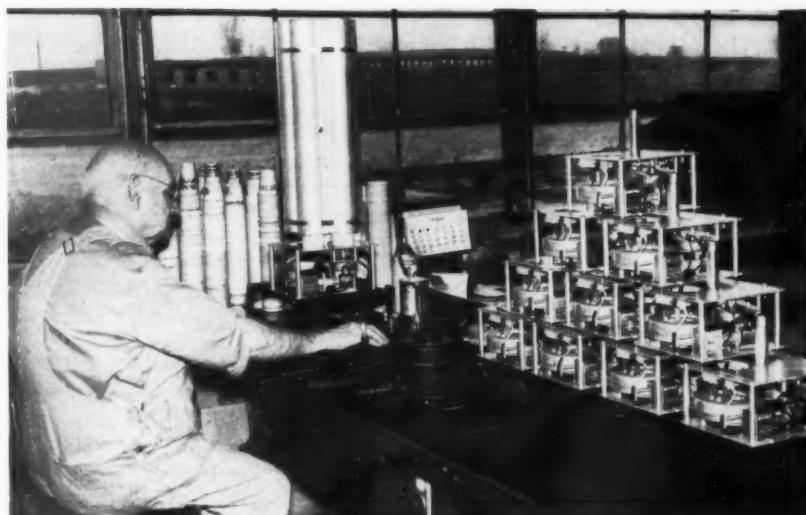
An interesting phase of the company's operation is the service school conducted to familiarize its customers with the machine. They are taught how to service the machine only after they are shown how it is built, and each of the functions is explained.

Larger operators have separate service

Assembly of the dispensing mechanism that is used in the powdered machine.



MPM MAY • 1959



Testing the cup dispenser. These dispensers are made with six or ten turrets for holding cups. At right are turret assemblies for the cup dispenser.

crews, while smaller operators handle servicing themselves. The usual procedure for those attending the service school is to visit the plant for a week and work on sub-assembly and final assembly. They are completely familiarized with the stockroom which stores and catalogs 5,700 different items for replacement purposes.

Well equipped fabrication setup

Some fabrication of small parts is done in the plant's well equipped metal working and welding section. They have several spot welders, a press brake, and a 35-ton punch press. Spot welding the brewer supports for the fresh brew machine is typical of the scale of work done in fabrication.

Conveyored, infra-red oven, finishing system

For the frequent occasions when parts must be painted in the plant, there is

a compact, conveyorized paint room. It is equipped with a water wash spray booth, conveyor, and an electric infrared oven. Typical parts finished here are light reflectors for the lighting fixtures in the machines.

Sub-assembly and pre-testing

Practically all of the sub-assembly work is done in the plant. The only exception to this is the wiring harness assembly. This was formerly assembled in the plant but, when it was learned that the wiring harness assembly could be purchased for practically the same cost as the wire alone, it was decided to have this done on the outside.

Each station in sub-assembly is separated from the others in that all of the work necessary on one component, including testing, is completed right at that table.

The dispensing unit for the powdered machines is assembled by one man at the first table. This man is responsible



The woman at left is assembling the wiring harness to the control box for the fresh brew machine. The woman at right is mounting switches, cams, and the motor to the control box for the fresh brew unit. Wiring harnesses are shown on shelves in background.

for the testing of the unit as well. Strict rules of cleanliness are adhered to at all times in sub-assembly, as well as in the rest of the plant.

Two sizes of cup dispensing units are assembled and tested at the next assembly station on the line. One man handles both phases of this operation. Cup dispensers are made on a licensee basis

Testing the control and selector panel for the powdered machine. The graph recorder next to the man is calibrated to check the amounts of the ingredients dispensed into a cup. These amounts are controlled by cams at the top of the unit. The man is adjusting the cams here.



from the manufacturer of the paper cups.

Control panels for all of the machines are assembled at one table by a number of workers, each of which is assigned to a specific task. The panels become as complicated as the machines they control. The machine that requires coffee, soup, and hot chocolate selections, in addition to the usual sugar and cream selections, is the most complicated. In testing, the control unit is first set for the amounts of liquids they are to dispense. This is done by setting motorized cams at the top of the unit and then checking these settings with a specially-calibrated graph recorder.

At the next sub-assembly table, the wiring harness is mounted to the control box for the fresh brew machine. All of the switches and cams, and the motor, are connected to the control box. The entire hopper mechanism for dispensing ground coffee, the liquid level control which actuates the hopper release when the supply of brewed coffee runs low, and the holding container are assembled here. Testing the fresh brew unit includes checking the cams, switches, and slide seal for dispensing the correct amounts of coffee.

The brew mechanism is an interesting assembly. The seal for the brew chamber is made of an aluminum extrusion with a facing plate of rubber. Seventy grams of coffee are automatically allowed to enter the brew chamber, setting the brewing cycle into action. Ten cups of coffee are brewed and then dispensed

into the holding chamber. The used coffee grounds are automatically emptied into a plastic waste container, and water is flushed through the brewer to clean it before the next cycle.

The automatic cleaner can be set so that it cleans the brewer just before the machine is used in the morning, or for any hour of the day.

Four final assembly lines

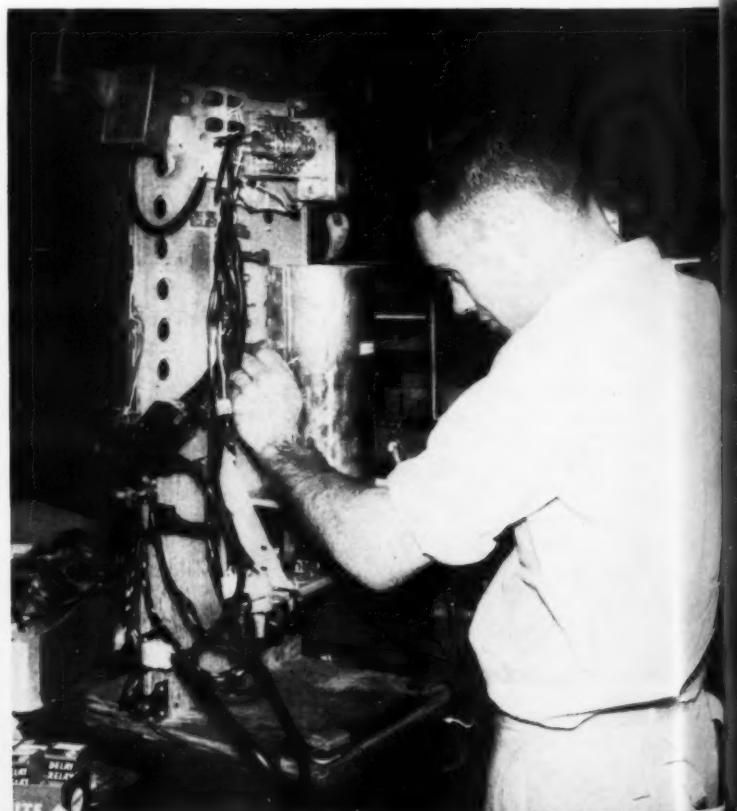
All cabinets for the machines are fabricated and finished on the outside. All of the bracing and mounting brackets have been installed during fabrication.

There are four separate lines for final assembly in the plant. The first is for the powdered machine in the 500-cup model, including all its variations. The second line is for the fresh brew, in both the 500 and the 1,000-cup size. The next is for final assembly of contract-manufactured machines. And the fourth line is used for the assembly of the filing cabinet machines.

At the start of the final assembly operation, the outer trim and vending opening are installed. Next the water heater, plumbing, and main cable for all electrical components are installed. The third step is the installation of the dispensing mechanism, the front selector panel, and the corresponding interior

EXCLUSIVE MPM PHOTOS

Fresh brew selector panel testing. This man is testing each switch in the unit.



selection plates. Following that, all electrical components are wired and hooked in, and then the machine is ready for final inspection.

Refrigerator units (for those machines which require them) are assembled in the first step, or when the plumbing is installed in the machine. The entire outer cabinet for the refrigerator units is made in the plant, with all of the inside components purchased outside. The control, evaporator, compressor, and inner cabinet plastic liner are obtained from suppliers and assembled in the plant. Foam insulation is used to insulate the plastic inner liner and the outside cabinet.

Final inspection thorough

At the final inspection, the unit is given a complete test with colored water. Several colors of test water are used to correspond with the actual ingredients the finished machine will hold. The machine is checked for temperature control, electrical operation, possible leaks, or anything that could possibly cause malfunction of the unit.

Quick-connect flexible water lines are used on the test line, with variable pressure controls on each line to simulate the conditions that can exist in use. The water pressure control in the machine

Two of the several stands used for final testing of the units. Each machine is connected to the water supply by flexible hose to deliver colored liquids for testing under simulated operating conditions.

is also checked to be sure that it is operating properly.

This is a list of the final check points on the fresh brew machine:

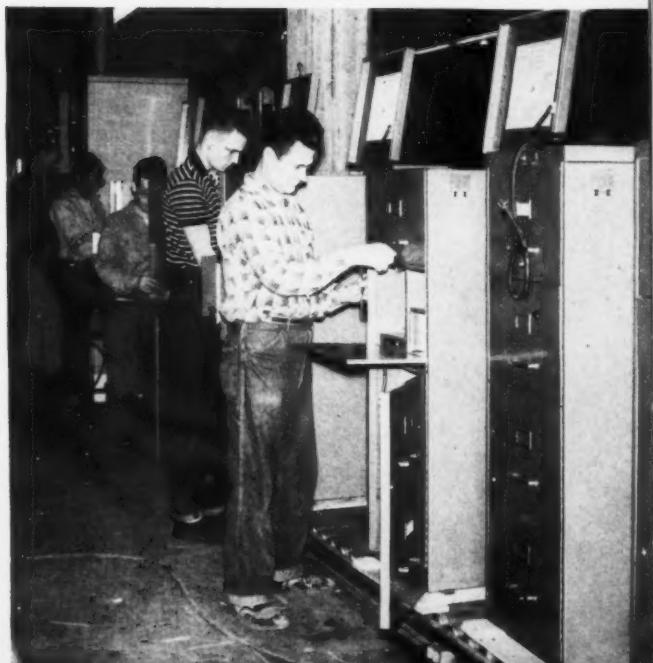
1. Check door alignment, moulding on trim, bezel, and light box for proper installation.
2. Make water and electrical connections.
3. Check selector knobs for proper alignment with dot on proper product.
4. Check timer and selector panel switches. Check cams against roller. Tighten set screws. Check cup mechanism switches.
5. Turn on water and power. Check for water leaks.
6. Set "oper." switch on clean. Bleed off air. Turn off electrode switch.
7. Check electrode setting.
8. Set intermatic timer and set trippers.
9. Install waste container.
10. Check out the brewer and hopper.
 - a. Flow pressure.
 - b. Check "off" switch.
 - c. Check "clean" switch.
 - d. Check "oper." switch.
 - e. Check "brew" time.
 - f. Check hopper operation.
11. Check pinch mechanism. Cream and coffee quantity with selectors.
 - a. Check out chocolate if machine so equipped.
12. Check refrigeration and water temperature.
13. Check cup drop, changer, nozzle adj., cup turret, and scavenger. Remove cash and cups.
14. Check rinse timer operation.
15. Check waste container.
16. Drain containers and check all hoses.
17. Check sugar container for rotor, tube, and funnel alignment.
18. Remove testing components and install all covers. Check labels.
19. Install junction box cover with warning tag.
20. Check lock for insertion and proper key number.
21. Check House Order to be sure machine complies.



This is the final operation on the assembly of the 1,000-cup capacity fresh brew machine. Waste container, which catches coffee grounds and rinse water as the machine automatically cleans itself, is being installed here.

15. Check waste container.
16. Drain containers and check all hoses.
17. Check sugar container for rotor, tube, and funnel alignment.
18. Remove testing components and install all covers. Check labels.
19. Install junction box cover with warning tag.
20. Check lock for insertion and proper key number.
21. Check House Order to be sure machine complies.

Assembly on another of the four final assembly lines. Here, the men are putting the last components into the "filing cabinet" fresh brewer.



TWO NEW HEBEL DEVELOPMENTS

Rotating disc, simplified timer provide jamproof service, compact design

PHOTOS COURTESY SPEEDWAY MOTOR DIVISION



The magic of a jamproof rotating disc and a compact, simplified timing mechanism, both engineered in combination with space-saving gear reduced motors, has projected the Fred Hebel Corporation successfully from cold to hot in the automatic vending machine business.

Fred Hebel, president of the corporation, invented and manufactured the first successful ice cream vending machine. Now he has come up with the only automatic machine utilizing rotating discs for vending hot canned soups and other foods . . . and a hot beverage machine that, thanks to the new timing mechanism and other interior design re-

finements, is the smallest low-cost, fully-automatic vendor of coffee and hot chocolate.

Hebel engineers and designs all of his vending equipment. He initiated his business on Chicago's near west side in 1949 with the introduction of ice cream machines and five years ago moved his operations to a new manufacturing plant at Addison, Ill., some 20 miles west of Chicago.

Hebel's first move from cold to hot was his Field Kitchen hot food machine for eight-ounce cans of soup, meats, and other foods. As Hebel and two of his chief aides, sales manager Charles Schinkoeth and shop foreman Bill Clohecy, explain, "Whenever cans are being vended, there's the possibility of careless loading or of cans becoming

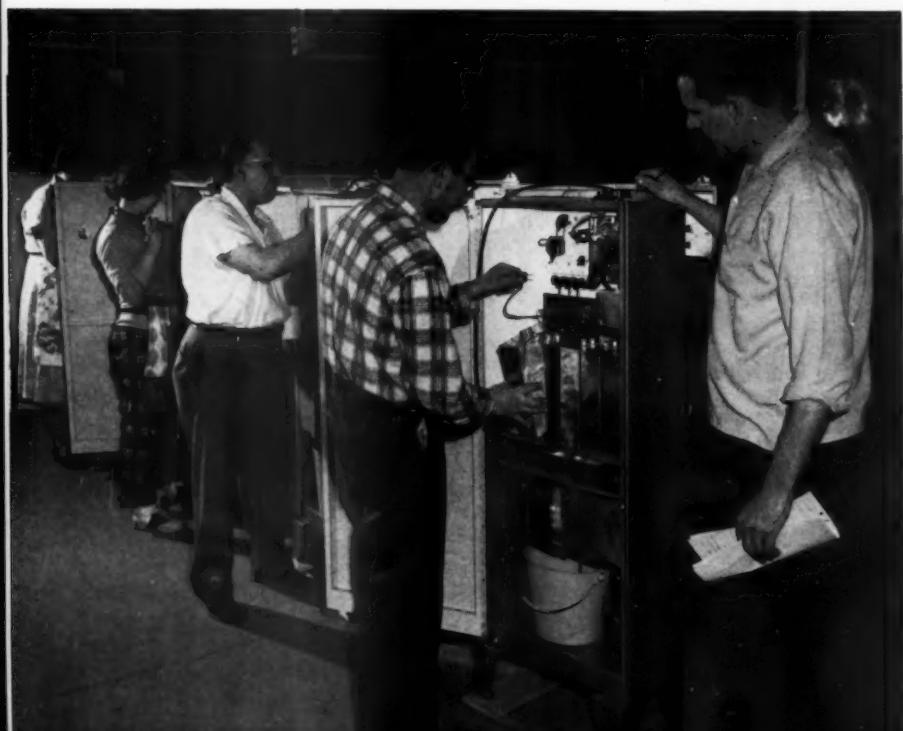


Fred Hebel, president of the Fred Hebel Corp., checks placement of one of the six motors which provide the vend control and disc rotation in his Field Kitchen hot soups and foods machine. Each tray has its own motor control, rotating disc, and spiral guide rail, and slides out for easy loading — 38 cans to a tray.

dented and out of shape. We sought a machine which would vend canned foods automatically without jamming even if either or both of these possibilities should occur."

So instead of a gravity design machine, Hebel came up with an arrangement of six trays, each equipped with a rotating aluminum disc or turntable, providing a half dozen possible food selections. Above each turntable, attached in stationary position to the tray, is a guide rail spiraling from the center to the outer edge of the turntable. On the right front corner of each tray assembly is a fractional horsepower motor, connected to the selector switch and coin drop as the vend and rotation control for that tray.

Each tray assembly slides out so the canned foods can be placed easily on the turntable 38 to a tray, inside the guide rails. When a vend occurs, the motor on the selected tray activates the turn-



A line of Hebel coffee and hot chocolate machines is assembled, including the fitting and plugging in of the ingredient canisters.



Heart of the compact, trouble-free hot beverage vendor is the simplified timing mechanism pointed out by Charles Schinkoeth, Hebel sales manager. Timer consists of two micro switches and small cam, latter attached to motor shaft.

firms wishing to set up more hot drink outlets. Only 57 inches high, 21 inches wide, and 11 inches deep, 1/2 to 2/3 the size of large beverage machines, this new vendor serves coffee black, black with sugar, with cream, and with sugar and cream, or hot chocolate with sugar and cream.

To provide this variety in a fully automatic yet economy-priced machine, an essential was simplification, particularly of the control devices. Hebel developed his own timer, consisting of two micro switches and a cam connected to a standard motor, gear reduced to 7 rpm and operating clockwise at 110 volts, 60 cycles.

The x-type gear case permits close mounting of the sub-fractional hp motor on the back of the interior control panel, behind the timer. When the coin drop is made, the pulse from the selector is relayed to the micro switches and motor, controlling the vend. One micro switch is keyed to the hot water flow, the other to the ingredient drop, with the motor closing the vend when the timer-cam cycle is completed.

"This compact control system, including the use of standard units for motor and non-changing coin control and the careful fitting of plug-in canisters and cup supply, provides complete automation at a minimum of space and expense and with little upkeep cost," Hebel points out. "A key factor in our development of machines for hot foods and hot beverages was the ability to utilize standard gear reduced motor assemblies with both the rotating discs and the simplified timer."

"In our hot beverage machine, we have produced a vendor that weighs less than 145 pounds and has a capacity of 210 cups of hot coffee and hot chocolate," Hebel continues. "We're continuing to build our ice cream vendors, of course, so we now have a well-rounded line of equipment for production from a seasonal standpoint."

Hebel designs his own cabinets as well as the other machine features but sub-contracts cabinet fabrication, limiting his plant operations to manufacture of various other components and the custom assembly of the vendors. His new economy-size hot beverage vendor, for instance, has a rugged steel cabinet on which the entire front opens, saving

table and the cans are moved inside the spiral guide rails toward the outer ring, kicking the end can into the delivery chute and leaving another can in position to be delivered at the next vend. The machine's six turntable-control motors are set up to operate with 119 rpm clockwise movement at 110 volts, 60 cycles and their front edge locations place them in easy reach for cleaning and servicing.

Hebel's hot foods machine is a large capacity unit with 228 cans in vending position on turntables, another 200 in pre-heated storage, and 200 in unheated storage. The vendor has flip-switch for three different prices.

The newest Hebel machine, the hot beverage vendor, already is in the 500-a-month production stage and is designed for small companies or for large

With all wiring connections completed, the compact panel is placed into position in upper section of the vendor cabinet.



Gear-reduced 7-rpm motor is attached to back of control panel of the new Hebel hot beverage machine with screws.

time in servicing the ingredient canisters and giving quick access to all parts.

"But there actually aren't too many parts," concludes Hebel, "because we've aimed to produce a trouble-free unit."

Connections to motor are made before placing sub-fractional hp unit into position on right front corner of hot foods tray.





Photograph by famous underwater hunter-photographer Jim Thorne

DEEP SEA HUNTER FAILS TO FLAKE INLAND TI-CO®

More than a match for ferocious 700-pound hammerhead sharks, this compressed-air powered gun fires underwater spears with terrific force. Again and again its high-speed missiles pierced this Inland Ti-Co galvanized sheet, yet at the edges around the holes there wasn't a trace of flaking of the zinc coating.

Yes, you can perforate Ti-Co sheets. You can subject them to deep-drawing, spin-drawing, punching, crimping, Pittsburgh lock-seaming, in fact the toughest fabricating processes—but you won't flake Ti-Co!

No wonder Ti-Co galvanized sheets are top-choice with manufacturers in such a wide variety of new applications and products. Ti-Co is manufactured with dry, oiled or chemically treated surfaces to meet your production needs. It comes in sheets or coils in gages 8 to 30 inclusive and in widths as great as 60 inches. Specifications, application and performance data, complete information, is all contained in a free Ti-Co booklet we'll be glad to send at your request. For your galvanized sheet or coils requirements, consult your Inland representative.



Close-up inspection
shows no flaking of
Ti-Co's zinc coating



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ALSO VENDS HOT TEA, CHOCOLATE, AND SOUP

A RECENT INTRODUCTION to the automatic merchandising industry is the "Brew-A-Cup" coffee machine by Rudd-Melikian, Inc., Hatboro, Pa. It brews individual cups of coffee directly from separate packets of ground coffee in less than nine seconds following coin insertion.

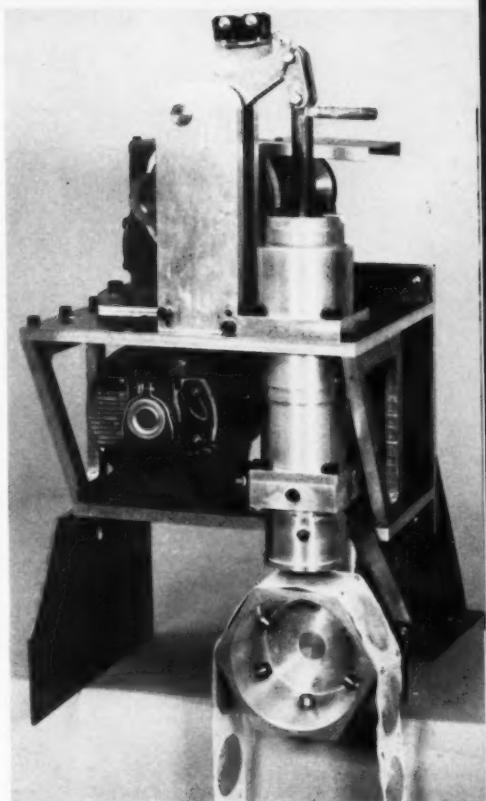
The "Brew-A-Cup" machine has been under development since 1954. Until this introduction, the vending industry had been limited to dispensing coffee concentrates, powders, and batches of brewed coffee.

Consistent flavor and aroma can be maintained more easily by packaging

freshly-ground coffee beans in individual air-tight but water-penetrable packets, each containing the measured amount for a single cup of coffee. The packets are connected by a specially-developed tape which enables each packet to be drawn one at a time, from a sanitary canister, into the brewing chamber. Here, hot water is forced through the packet, extracting and dispensing the coffee into a waiting cup below. This process can be repeated every nine seconds, and more than 500 packets can be stored in the machine.

Other advantages of the unit are the absence of loose grounds, and unused

**new 500-cup capacity unit, just introduced, can
brew a fresh cup of coffee every nine seconds**



Coffee brewed one cup at a time



(Above) — Heart of the machine is the brewing chamber and coffee-tape mechanism. At coin drop, a packet of ground coffee is drawn to the top position where hot water is forced through it, brewing a fresh cup in less than nine seconds.

(Left) — New "Brew-A-Cup" coffee brewing and dispensing machine, manufactured by Rudd-Melikian, brews individual cups of coffee from fresh, ground coffee beans and dispenses them in less than nine seconds. It also dispenses tea, chocolate, and soup.

coffee that must be dumped. Since each cup is individually brewed, the new machine operates as well on a 24-hour basis as on an eight-hour shift.

Operators help in planning

A unique phase in the development of the new machine was the help provided by a group of vending machine operators. This group gave practical suggestions before final production plans were set so that few if any problems would be encountered when the machine is in use.

The coffee used for this machine was specially selected and blended to insure uniformity from cup to cup. The blend had to be carefully selected because of the critical requirements of time, temperature, and oxidation present in the brewing of a good cup of coffee.

The new machine is 70 in. high (with 6 in. tubular legs), 35 in. wide and, upon vending operator recommendations, only 26½ in. deep. The standard model has a cup capacity of 500, and is designed to dispense four different commodities — coffee, tea, hot chocolate, and soup.



Elegance is the keynote of this automatic food service facility at the University of Kansas. A mahogany canopy gives overhead light and a planter with green foliage adds to the attractiveness of the area. Sales are excellent even though the unit is near the cafeteria of the dormitory in which it is located. Photo Courtesy Vendo Co.

Beauty, function emphasized on new machines

the unified-front look, plus a host of new ideas in operation, typify the latest in automatic merchandising machines



New take-a-break "Smoke Center" is a compact, low-cost machine that vends the 15 brands of cigarettes that account for 96 per cent of all cigarette sales. A lighted display panel highlights the product. Manufactured by Lehigh, Inc., Easton, Pa.

A new chocolate dispenser, which is said to be unique, has been developed by Vend-O-Matic. Its patented design takes powdered chocolate and hot water and, in a matter of six and one-half seconds, transfers it into a chocolate drink.

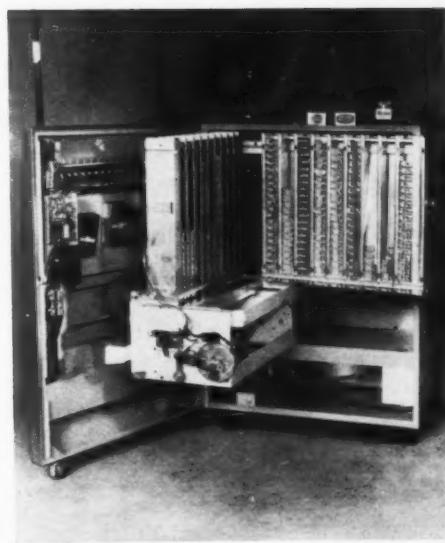


Easier and considerably-faster loading has been achieved in the new Smokeshop vendors, made possible by a modification which allows the rear columns to be loaded without disturbing the front columns. Manufactured by Automatic Products Co.



This compact coin sorter, 16 x 6 x 6 inches, is simple and inexpensive. Will separate up to \$100 worth of coins in two minutes. User opens drum, pours in coins, closes, replaces drum on base and turns handle. Standard Change-Makers, Inc.

This machine brews freshly-roasted coffee on demand in 15 seconds from the time a coin is inserted. It has had six months of testing in the field before introduction. Manufactured by Schroeder Products Co., Inc.



Cigaromat is said to be the only merchandiser specifically designed to enable you to gain double profits from cigar and gum vending. Made by Cigaromat Corp. of America.

More photos next page



Electric Change-Maker, 12 different models for 5¢, 10¢, 25¢, and 50¢ coins, dispensing various combinations of coins, including tokens. Manufactured by Standard Change-Makers, Inc.

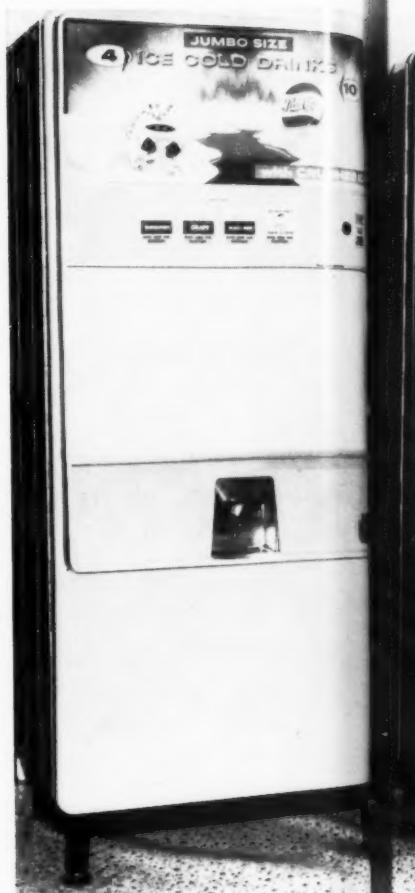




Hot drink vendor is specifically designed and developed to vend hot coffee four ways, and vend hot chocolate with cream and sugar. Entire front opens for easy servicing. The Fred Hebel Corp., Addison, Ill.



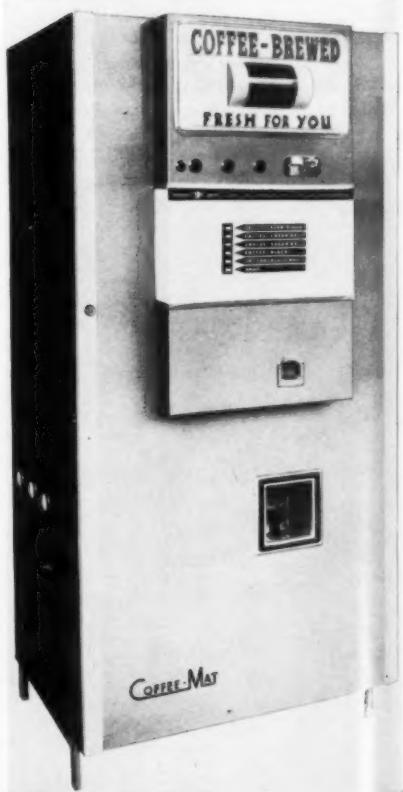
Candy-coated gum and ball gum are dispensed from these twin machines, which are mounted on pipe stand. Both product and machine are made by Ford Gum and Machine Co., Akron, N. Y.

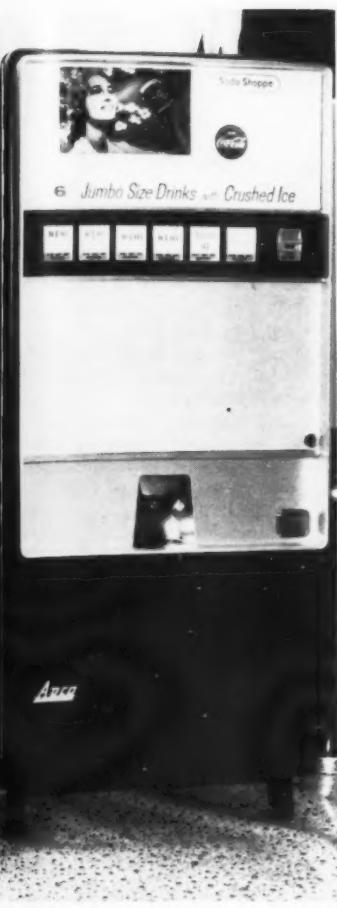


More vending machine photos

► Battery of vending machines installed at the Laundercenter Corporation's coin-operated automatic laundry in Woodside, N. Y. Arthur H. DuGrenier, Inc., Haverhill, Mass.

"Coffee-Mat" dispenses fresh brew coffee four ways, plus hot chocolate and soup. Ground coffee is sprayed with boiling water and allowed to drip through. Coffee-Mat Corp., Elizabeth, N. J. ♦

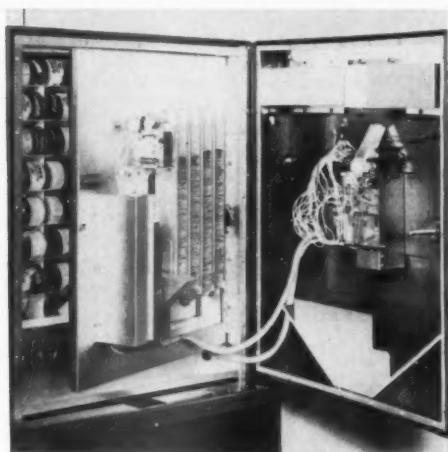




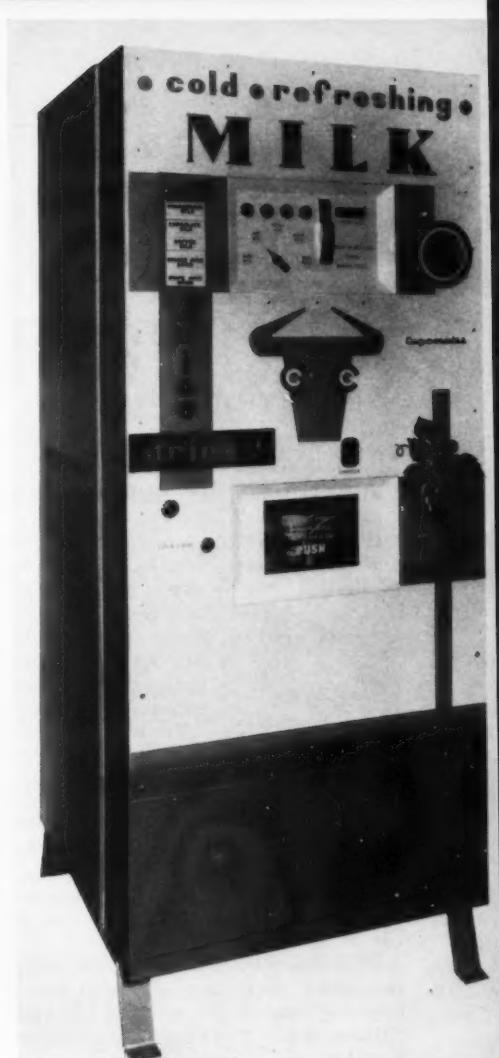
6 Jumbo Size Drinks w/ Crushed Ice

◆ The automatic SodaShoppe with Icemaker comes in a three-drink, four-drink, and six-drink model, all with 1,400-cup capacity. The customer can purchase these machines with or without the Icemaker. This unit ultimately makes, stores, and dispenses a portion of crushed ice in every cup that is vended. Apco, Inc., New York, N.Y.

◆ Complete food dispenser vends crackers, soups, and spoons, and has easy front-loading rack. Base has 400-can capacity storage cabinet. Machine has six selections, 16 eight-ounce cans per selection, with 96 total vending capacity. Monarch Range Co., Beaver Dam, Wis.



◆ The uniform cabinet line, introduced at the NAMA exhibit in St. Louis last November, is designed to permit the use of banks of machines without the necessity for false or decorative fronts to achieve an appearance of uniformity. National Vendors, Inc., St. Louis, Mo.



Model 8 milk-juice vendor has capacity of 650 servings at a single loading, with five flavors by post mix. Foodco, Manchester, N. H.



K. C. Melikian

EXECUTIVE VICE PRESIDENT,
RUDD-MELIKIAN, INC.

Limited only by imagination

QUITE FRANKLY, I feel that the future of automatic merchandising can be limited only by the imagination of the people within the industry to find new ways to fill the real needs of the consumer.

For example, just last month we were able to start marketing a machine which for the first time brews individual cups of coffee from pure, roasted coffee beans (not soluble solutions), and dispenses each cup in seconds.

Also, hot food platter machines in numerous plants across the country now cook and dispense individual nutritious meals to factory and office workers quickly and at prices they can pay. Each time one of these automatic dispensers is activated by a coin drop, it fills a basic need of a consumer. All our products of the future must do precisely this if we are to make solid progress.

Such dispensing units should be only the beginning in just one of many areas of potential expansion for automatic merchandising, since our industry can grow to become a basic marketing medium for the products and services of practically all industry. As a young industry with the promise to exceed even the rapid strides taken in the last decade, we must discipline ourselves to grow wisely.

Now more than ever, we must create new and better machines—keeping the consumer and his needs constantly before us. We must take increasing pride in our young business, and the profits we derive from the vital role we will play in an expanding economy. Finally, we must recruit and develop dynamic management men who are as dead-sure of our industry's place in the future as are we who witnessed its beginning. If we do a conscientious job in all these areas, I see no practical limit to the future of automatic merchandising.

Thomas B. Donahue

VICE PRESIDENT AND TREASURER,
NATIONAL VENDORS, INC.

**Growth has been
exceedingly fast**

IT IS DIFFICULT to find a true pessimist in the automatic merchandising industry. There is a very sound reason for this attitude — the growth of automatic merchandising has been exceedingly fast in the last ten years and has been consistent and sound for almost 30 years.

This sound and constant growth didn't just happen. It had its origin in the inventive engineering and imaginative sales talent of our pioneers, supported by a tremendous research and development program of our manufacturers during the last five years. The resulting new designs and products have been eagerly adopted and used by operating companies (vending specialists) throughout the country in a successful attempt to broaden the sales and service base of the automatic merchandising industry.

Current advances include more versatile coin handling devices, modern styling, and new types of machines selling more and better quality merchandise. Merchandise vending machines today are, for the most part, "inflation proof" in that they have sufficient pricing flexibility to cope with fluctuating retail selling prices. To the professional operator, they are a sound investment both for the present and for the future.

Dan V. Carr

SALES MANAGER,
CONTINENTAL VENDING MACHINE CORP.

The future broadens

THE FUTURE for the vending machine industry has broadened immeasurably. By 1969, automatic in-plant feeding will be a \$1 billion industry itself, with hot meals provided daily to millions of industrial workers at unit prices under 50 cents.

The growth of in-plant feeding in the next decade will also benefit factory management. As more and more plants learn the value of vended meals, in-

FUTURE OF AUTOMATIC

plant feeding will become a profitable undertaking, versus the subsidized operation it is in some cases today.

Let's look at the record. In 1956, there were 6,800 hot food vending machines in operation. Last year this number jumped to 17,100, an increase of over 250 per cent in two years. By 1969, there is every reason to believe automatic hot food vending devices will be over the 100,000 figure.

As vended meals become commonplace, vending machines will become increasingly efficient. Automatic currency changers now under test by leading companies will increase greatly the number of meals a single machine can serve in a given time. Individual aluminum plates for each hot meal will help simplify machine construction and allow the route operator to provide a vast variety of menus. In addition, many major food companies will ultimately plan and package food exclusively for the vending operator.

The limitations of the future will be only the capabilities of the vending industry to supply the demand.

M. B. Rapp

EXECUTIVE VICE PRESIDENT,
APCO, INC.

**New horizons for automatic
merchandising**

THE PHENOMENAL GROWTH of the automatic merchandising industry . . . from \$600,000,000 annual retail sales in 1946 to \$2,132,576,000 in 1958 . . . will probably continue at an even greater pace in the next five years. It should double in the next three years.

There is a sound reason for this optimistic prediction. Until now, the vending machine operator has been able to provide industrial management with virtually every type of food through vending machines with the exception of one. The current list includes coffee, soft drinks, milk, sandwiches, pastries, candy, soup, and ice cream, as well as cigarettes.

The one missing item has been hot foods served in attractive containers. This void is about to be filled. Before the year is up, hot food machines, together with a wide variety of pre-

MERCHANDISING

packaged meals, will be in full production.

This development will be responsible for a revolution in automatic merchandising. Plants which, until now, had relied primarily or exclusively on manually-operated cafeterias will now depend on automatic merchandising to solve their employee feeding problems.

Robert W. Wagstaff

VICE CHAIRMAN,
THE VENDO CO.

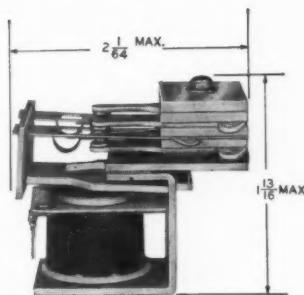
A new plateau of achievement

SUCCESSFUL PERFORMANCE in the food service field in locations where mass feeding requirements call for fast service, round-the-clock availability, and low cost, nourishing food has put the automatic merchandising industry on a new plateau of achievement.

Vending has demonstrated its ability to provide not only refreshment but also away-from-home meals for vast numbers of people, ranging from workers on the production line to students at leading colleges and universities. The penetration of vending into the food service field is a trend which must inevitably continue to develop, when we consider the advantages which vending offers in the way of distribution in scattered areas and reduction of labor payrolls. As the tempo of living accelerates, as time becomes more precious, and as the cost of labor rises, the value of automatic service should increase proportionately.

Acceptance of vendors as dependable food merchandisers is resulting in a new requirement for the automatic machines. The importance of attractive atmosphere in places where food is served is widely recognized, and both vending equipment and the areas where it is installed are reflecting emphasis on modern styling and design. In the years immediately ahead, we can expect to see vending equipment increasing, not only in versatility, but also in attractiveness and adaptability to the latest decorative and architectural trends.

ACRO'S POWER RELAYS USE SILICONE STEEL TO REDUCE RESIDUAL MAGNETISM



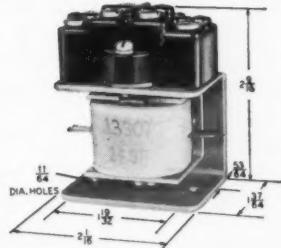
Variety of coil voltages available.

Acro's special design eliminates the coil-type return spring — removes the possibility of "snagging" wires or cables when installed in your unit. No cutouts in the frame — so the magnetic circuit operates even further below saturation point. A special leaf-type armature return spring permits close control of contact pressures — can be adjusted for a stacked relay of 1, 2, 3, or 4 sections.

And because the residual magnetism is so low — your relay switching system wastes less power — letting the coil run cooler — up to 15° F. in some cases. The silicone steel also virtually eliminates sticking due to residual magnetism — assures prompt releasing.

HEAVY-DUTY POWER RELAY TO TAKE HEAVIER LOAD

Acro Heavy Duty Power Relays are designed to take heavy loads, and to work in stress spots where others have failed. The switch is approved by Underwriter's Laboratories for 2 H.P. Requires only from 2 to 6 watts to actuate and hold — depending upon its application. Another plus feature — for easy maintenance the switch or coil can be replaced without dismounting the relay.



Available in a variety of contact arrangements for controlling up to and including four different circuits. Variety of coil voltages available.

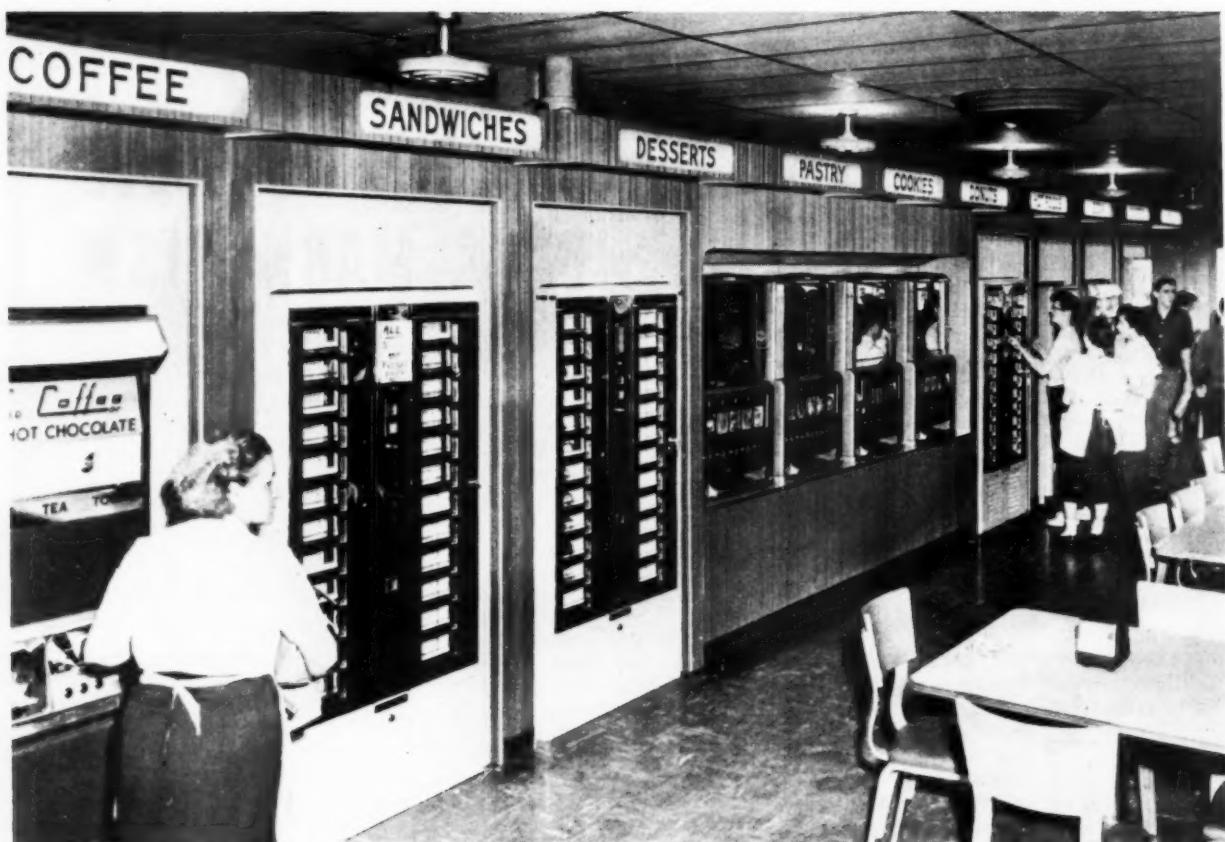
When you have specific relay problems — write us. Take advantage of Acro's free engineering service. We'll be happy to go to work on your problem — and to solve it — as we've solved hundreds of others in the past 20 years.



ACRO DIVISION

Robertshaw-Fulton CONTROLS CO.
COLUMBUS 16, OHIO

Manufacturers of a complete line of load-tested precision snap-switches and relays.



An installation at Buxton, Inc., Agawam, Mass.

From appetizer to dessert

complete meals can be merchandised from one machine; one side of unit is heated, the other refrigerated

IF YOU CAN SEE WHAT YOU'RE BUYING, the chances are that a sale will be made. That's the theory Wittenborg, Inc. of Denmark and the U. S. A. works on, and it has brought excellent results.

The latest Wittenborg machine is a hot and cold combination that is refrigerated on one side and heated on the other. It is offered with all of the important features of earlier models, such as front, or front-and-rear loading, interchangeable two, three, four, six and eight-compartment trays, and aluminum or see-through plastic throwaway dishes. Another feature recently added to the entire line is a pricing mechanism that

can be set to vend at four different prices simultaneously.

Actually, the combination machine is quite similar to the rest of the line except that one side is cooled and the other heated instead of one condition for the entire machine. The refrigerated food is sold from the left side and the heated food is sold from the right side. In the bottom of the machine is a refrigeration unit similar to those in all-refrigerated machines. The cooled air is forced up through the column by a blower. The right hand side is heated by means of a 500-watt electric heating unit located behind and beneath the

right-hand column. (See illustration at bottom of next page).

The temperature in the two columns is adjusted by means of the same temperature controllers as in the all-refrigerated and the all-heated machines. The working temperature is also the same as in these two machines.

Controls on the refrigerated side consist of a starting relay and a protective automatic overload switch. Two motor driven fans are connected, one to the condenser and one to the evaporator. The condenser fan operates whenever the compressor comes on. The evaporator fan operates continuously with the

main supply of power on and circulates air through the evaporator and a duct behind the columns where it is distributed to cool the goods.

Heat is provided by an electric resistance unit of 500 watts capacity. Temperature control is provided by an adjustable thermostat fitted behind the column.

Drums replaceable

All Wittenborg machines are equipped with drums for holding the goods. They are either four and one half inches or three inches high; the four and one half inch drum can be fitted nine to a column, and the three inch drum, 12 to a column.

The columns are interchangeable, but a three inch drum cannot be changed with a four and one half inch drum.

The nine inch diameter drums are divided into fixed segments from one to eight per drum. Each drum is fitted with a spring which is tightened as the drum is filled. As each segment of the drum is emptied, the spring releases and moves the drum to the next segment.

Each series of six or four windows, depending on the number of price units set, are priced at one price, and only one window at a time may be opened upon the insertion of the proper amount of money. As the window is opened, by tilting it toward oneself, the door locks the rest of the mechanism and causes

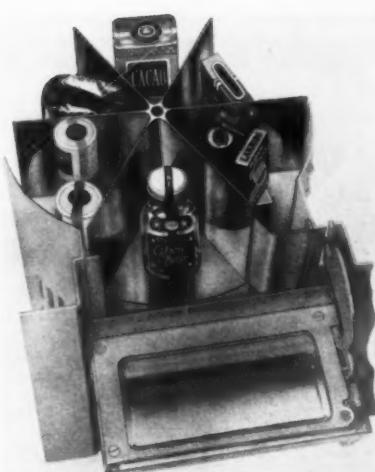
the money to be dropped into the cash box. When the door is closed the drum moves around to the next compartment.

Automatic rejector in coin mechanism

The coin mechanism consists of a rejector, which tests the coins and either rejects them or drops them into chutes according to their value. Each chute has a micro switch which is tripped by the coin as it drops. This micro switch causes an impulse to be given to a stepper, which steps up the value of the coin in units of one impulse for each five cents. When the total amount of coins deposited amounts to the price set on the stepper, it closes a switch which in turn allows a sale in that section controlled by that stepper. The machine contains from four to six steppers, each of which may be set from five cents to \$1.25, or as high as \$2.50.

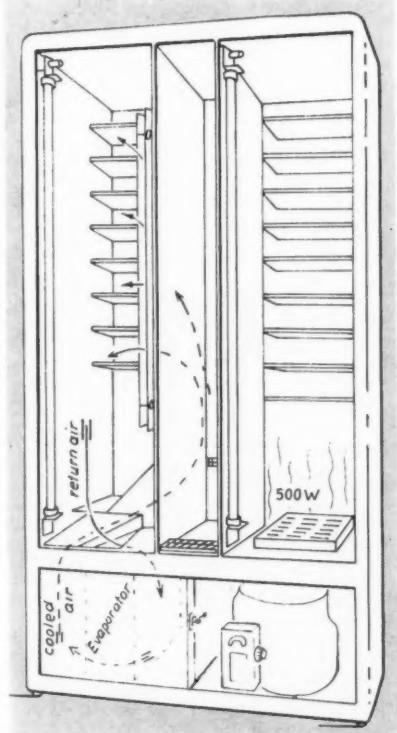
One of the leading manufacturers in Europe

Wittenborgs Automatfabriker, Odense, Denmark, is one of Europe's leading manufacturers of vending machines. It is said that visitors are constantly amazed at the number of items that may



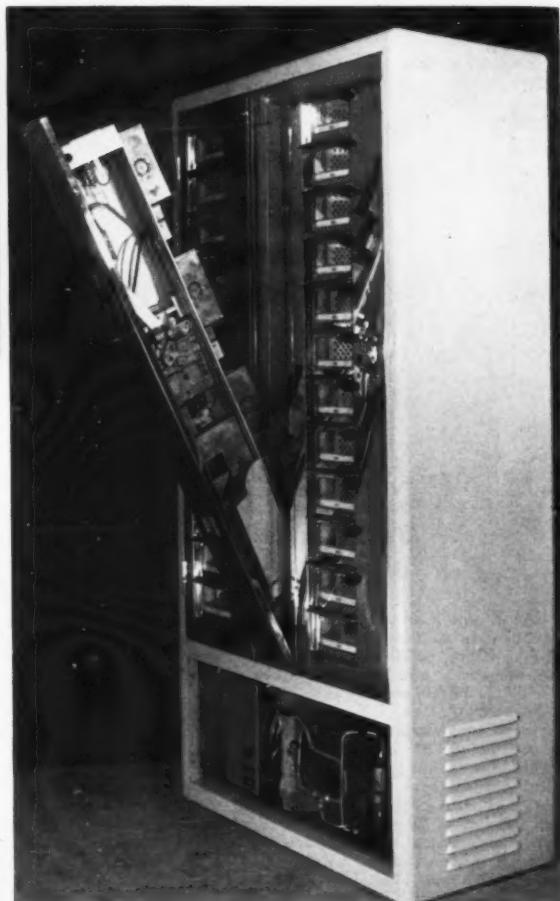
Closeup of a six-segment drum and door assembly.

be purchased from these machines. Many are placed directly on the street or in railroad stations. Bouquets of flowers, bicycle parts, and fuse plugs are among the items available from these machines, in addition to ready-to-eat foods. Groceries are available 24 hours a day, also.



Drawing of the interior of the Hot-and-Cold machine.

A Hot-and-Cold machine with the coin mechanism tilted out for servicing.



WHAT'S NEW IN AUTOMATIC MERCHANTISING COMPONENTS



Thin Design Sub-Fractional HP Motors

Six sub-fractional horsepower ac motors now are available with a new thin-design, Z-type gear reduction unit which is only 1 13/32 inches thick.

The new Z-type unit was developed for a variety of vending machine, appliance, and general applications requiring exceptionally-flat motor and reduction combinations in limited-space, high-torque situations.



The Z-type reductions are available for continuous duty applications with SpeedWay No. 60AC, 40AC, or 70AC motors or for intermittent duty use with SpeedWay No. 60AH, 40AH, or 70AH motors.

SpeedWay's new Z-type unit features the motor as an extension of the gear case, with overall length of 5 1/2 inches, width of 2 5/8 inches. The Z unit has wide face gears to withstand greater shock loads and is available in wide variations of load capacities with speed range as low as 1/4 rpm, making it adaptable to many sub-fractional motor applications.

For further information, write Dept MPM, Speedway Motor Div., Thor Power Tool Co., 1421 Bernsdale Rd., LaGrange Park, Ill.

Adjustable Cup Dispenser

An adjustable cup dispenser is available that is said to be brand new in operating principle. It will handle all popular-size vending cups on the market. It weighs a maximum of 20 pounds and the base of the unit is contained within the diameter of the turret. Cams and switches for other circuit controls are optional. The key to the operation of the unit is a six-point suspension and separation principle, and a reportedly exclusive new ring that provides fast, dependable cup dispensing. The ring is adjustable to dispense all popular cup shapes and sizes at the flick of a wrist. For further information, contact Dept. MPM, ABT Mfg. Corp., Atwood Vacuum Machine Co., 1400 Eddy Ave., Rockford, Ill.



Multi-Level Pressure Control

It is possible to obtain three preset liquid levels automatically by pushbutton with the ACRO multi-level pressure control. This pressure controller is a precision device normally used to control a height of liquid within very close limits. The control has two compartments, separated by a sensitive diaphragm. One compartment contains a highly sensitive switch. The other compartment is a trapped air pressure chamber. Variations in pressures are transmitted directly to the diaphragm, through a built-in connecting tube. The movement of the diaphragm, caused by variations of pressure, actuates the switch mechanism.

Optional features available include a surge damper, contact arrangements SPNO or SPNC, special settings and one half in. air connector tubes. For further information, contact Dept. MPM, ACRO Div., Robertshaw-Fulton Controls Co., Columbus 16, Ohio.

Electrically-Actuated Coin Counter

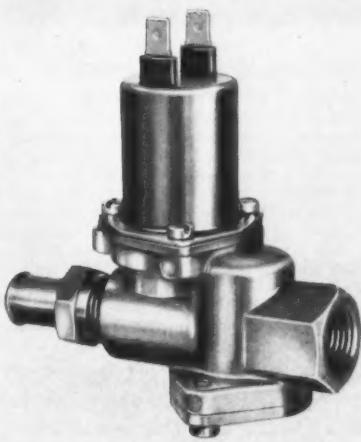
Continuous totalizing of coin receipts is achieved through special electric counters. Each counter is designed to register only one coin value. For example, a nickel counter adds five cents for each actuating impulse; a quarter counter adds 25 cents, etc. Impulses for actuating the counter may be provided by a switch or other contacting mechanism that can be reliably operated by each coin. Electrical operation permits installation of the counters for easy reading and protection against tampering, either adjacent to or remote from the point of actuation.

To simplify reading, different colors are used for numerals that register cents, and numerals that register dollars. The new units are available for counting one cent pieces, nickels, dimes, quarters, and half dollars. They can be supplied in the panel mounting model illustrated. Further information can be obtained from Dept. MPM, Production Instruments Div. of General Controls Co., 8080 McCormick Blvd., Skokie, Ill.



Pressure Reducing and Regulating Valve

A new valve is available in two-way or three-way models with right hand or left hand gauge connection. It has a composition diaphragm that makes it suitable for hot water service. Other features of the units are travel limit stops in the spring chamber to protect the valve against over pressure in downstream line. These valves also have renewable seats that are designed for wide differential pressures and variable flows. Bracket or panel mounting is available. For further information, contact Dept. MPM, A. W. Cash Valve Mfg. Corp., 666 E. Wabash Ave., Decatur, Ill.



Solenoid Valve Gives Constant Water Pressures

A new, specially-designed solenoid valve is now available for all types of vending machines. Designated the S-25, the valve features constant water flow and accurate delivery regardless of varying supply pressures, according to the manufacturer.

Accurate delivery of a predetermined amount of water is available as a result of a unique flow control device built into the valve outlet connection. This valve is already being used successfully in coffee and hot chocolate vending machines, as well as automatic dish washers and water softeners. The unit has positive opening and closing at pressures from two and one-half to 200 psi, with flow capacities from one-quarter to six gpm, for temperatures up to 180° F. A large variety of brackets have been designed to meet any installation condition. It is available with any of three different connections: pipe, tubing, or hose; and with top or side terminals, pigtails, or flexible metal hose. Contact Dept. MPM, Detroit Controls Div. of American Standard, 5900 Trumbull Ave., Detroit 8, Mich.

All-Purpose Relay Features Nylon Blade Lifter

A new, light, all-purpose relay employs a nylon blade lifter to assure added life and dependable operation. It is reportedly constructed to provide a large amount of contact wipe and high contact pressure. The unit is suitable for use in industrial control and vending machines, and other applications.

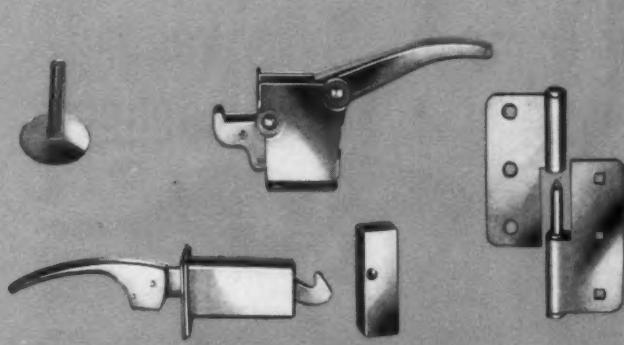
Available in all voltages up to 230 volts A.C. and 110 volts D. C., the relay can be supplied with contact arrangements up to 4PDT with a choice of 5 amp. or 10 amp. contacts. It weighs approximately 3 ozs. and measures 2 in. long, 1 in. wide, and 1 - 11/16 in. high. For further information, write Dept. MPM, Artisan Electronics Corp., 171 Ridgedale Ave., Morristown, N. J.



More components on next page →

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for the Vending Industry



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CATCHES

HINGES

LATCHES

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The answer to *your* hardware need may be simple or complex . . . it may already exist among Amerock's hundreds of items available for vending machines, appliances, and other metal products. Or it may require a custom design — the creation of an exclusive, new hardware item to meet your individual requirements as to styling, function, cost and assembly efficiency.

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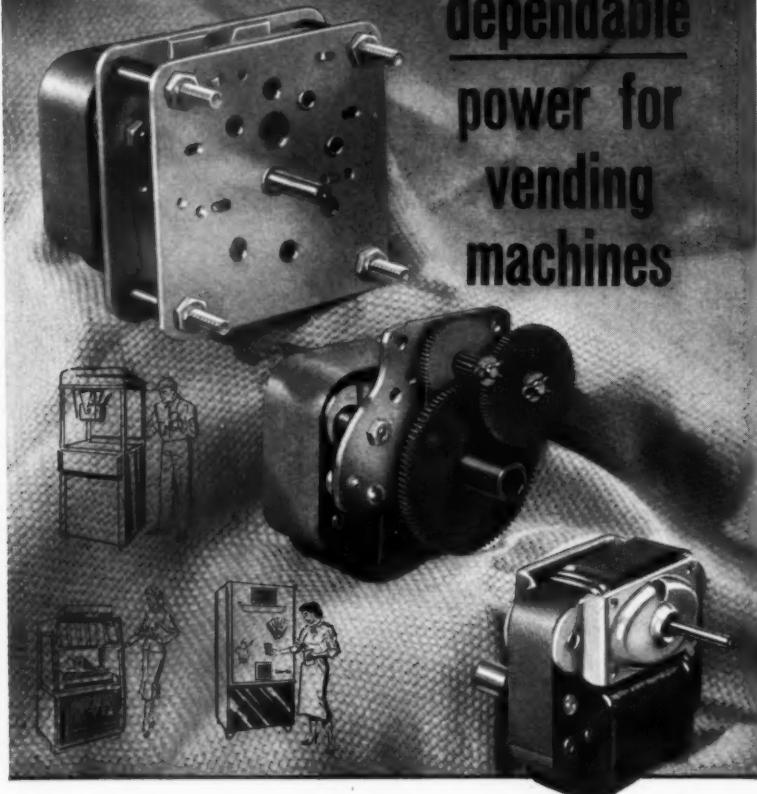
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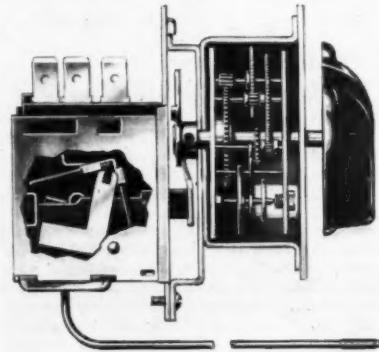
New components

Vending Machine Control

A control for hot or cold beverage vending machines has been introduced which, it is said, will assist in complying with recent recommendations of the U. S. Sanitation Ordinance and Code for public health safety. Designated the F11 Health Code Safety Control, the unit is available for machines vending from refrigerated or heated storage compartments, and is designed to meet most State requirements now in effect.

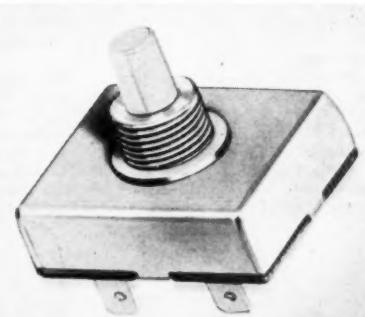
The controls (F11-1000 Series for cold vending, and F11-1200 Series for hot vending), are semi-automatic types with manual reset mechanisms responding to temperature changes, and a mechanical spring-wound timer as a component.

Instruction Sheet 1726 may be had by writing Dept. MPM, Ranco, Inc., Columbus 1, Ohio.



Rotary Switches

Eight different combinations of 1, 2 or 3 SPST switch positions are offered in a newly-available series of rotary switches. Designed for appliance, vending machine, and other industrial applications, the switch features 3/16-in.-wide spade terminals with holes for solder connections, positive indexing, metal cover and a molded nylon shaft and cam. Listed by Underwriters' Laboratories, Inc., the unit is rated at 10 amps, 125 volts A.C., 1/3 h. p., 125/250 volts A.C. For further information, contact Dept. MPM, Controls Company of America, 9555 Soreng Ave., Schiller Park, Ill.



Snap Action Appliance Switch

A complete line of appliance switches is available featuring more over-travel, higher H.P. rating, and a wear-resistant nylon button. The line includes the leaf type, the roller leaf type, pushbutton, and the overtravel pushbutton. There is provision for a minimum overtravel of .100 in. without damage, and the case is of an environment-resistant interlock design. The terminals accept either solder or disconnect connections. For more complete information, write Dept. MPM, Cherry Electrical Products Corp., 1650 Deerfield Rd., Highland Park, Ill.

Solenoids for Wide Range of Applications

A complete line of solenoids for a wide range of uses in vending machines is available for all commercial voltages and frequencies. These solenoids utilize double shading coils that are said to deliver high seating pull without hammer or excessive A-C hum and chatter. The plunger's stroke is phase-timed to eliminate any power drop-off. Standard sizes range from one and three eights in. x one and three eights in. to three in. x three in., stroke lengths fractional to two in., and pull and/or push capacities to 35 lbs. Contact Dept. MPM, Dornmeyer Industries, 3436 Milwaukee Ave., Chicago 41, Ill.

Thermostatic Solenoid Mixing Valves

A line of control valves is available to turn water on and off, to control the rate of flow, and to mix the water to the desired temperature. Several combinations of solenoids, thermostats, and flow controls provide valves that can perform a wide variety of tasks. Double or triple solenoids with flow control can control hot, medium and mixed water and, on the triple solenoid unit, cool and cold water. For further information on the complete line, write Dept. MPM, The Dole Valve Co., 6201 Oakton St., Morton Grove, Ill.

Self-Sticking Nameplates

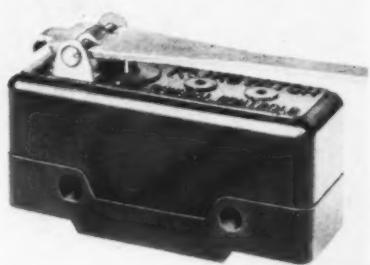
Nameplates fabricated on aluminum, brass, stainless steel, or vinyl plastic are now available with sunken or raised letters. They can be used as instruction labels in the interior of vending machines or attached to the outside of the machine for company identification.

Adhesive backing eliminates the use of metal fasteners. Application can be made to rough or curved surfaces. For further information, contact Dept. MPM, Miller Dial & Name Plate Co., 4400 N. Temple City Blvd., El Monte, Calif.

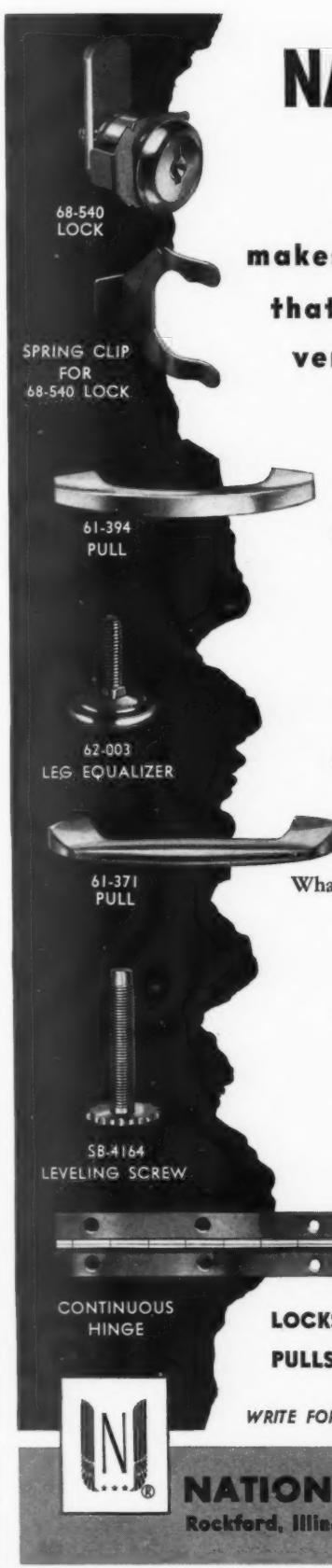
Mounting Ears Aid Switches

Rigid mounting, back of panel or other surface, in fixed relation to actuating mechanisms, is provided by integrally-molded mounting ears on basic switches. Side mounting holes permit use of the mounting ears for attaching various forms of actuating mechanisms.

Encased in molded phenolic, this snap-action switch is available with SPDT or SPST normally-closed contacts rated 8 amp. at 115 volts, non-inclusive load.



Operation requires 14.26-oz. force; release occurs automatically when force is reduced to 6.34 oz. Operation pretravel is .021 inches maximum, differential is .0035 inches maximum, and overtravel is .005 minimum. From the center of one mounting hole in the ear to the other mounting hole, it is 2.187 inches in length. Contact Dept. MPM, General Controls, Automation Div., 8080 McCormick Blvd., Skokie, Ill.



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makes the hardware
that makes a good
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Quality hardware components
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NATIONAL LOCK COMPANY
Rockford, Illinois • Industrial Hardware Division

The dollar bill changer

unit fills need for quickly making change at point of purchase, and is the result of two years of development and field testing

WHEN ATWOOD VACUUM Machine Co. purchased the ABT Division about two years ago, Atwood management put into effect an accelerated program of product improvement and research. W. A. Patzer, president of ABT and in charge of research, states that the two basic aims of this program were to firstly, improve ABT's current line of coin mechanisms, and secondly, through research, develop new products in order to broaden the ABT line.

One of the outstanding products developed through this research program is the dollar bill changer. The idea was conceived by Patzer, and development work was started just about two years ago. After a year of development and research, the first working models were placed in heavy traffic areas for field testing. A year of field testing has now been completed and the company is manufacturing and distributing, on a lease basis, a limited number of machines. The company plans to manufacture and distribute the dollar bill changers on an unlimited basis in the near future.

What does it do?

The dollar bill changer is a mechanism capable of non-destructive testing of paper. It is thus able to detect the validity of \$1.00 bills and automatically delivers change in a convenient combination of coins. It accepts only \$1.00 bills and rejects all other substitutes such as: plain paper, counterfeit bills, or foreign bills. This mechanism will deliver change only on the acceptance of a genuine dollar bill.

ABT engineers report that when it becomes desirable, and there is a demand for it, a bill changer could be produced that would handle other denominations of paper currency using the same basic principles incorporated into this mechanism. However, the present machine is designed to handle only \$1.00 bills.

Construction and components

The dollar bill changer consists of an attractive metal cabinet containing four basic component parts. The cabinet has a baked enamel finish, a stainless steel counter top, and a plastic, movable receptacle for the \$1.00 bill. Its overall dimensions are: 25½ inch width, 45 inch height, and 15 inch depth. It can be bolted to the floor or the wall. The engineers have used the basic concept of modular construction in designing this machine. Each of the four basic components can be removed independently and replaced in the field.

The first component is the detector unit. This unit examines all bills placed in the machine, accepts valid \$1.00 bills, and creates an electrical impulse through the control unit to the coin dispenser for change. Invalid bills are rejected and returned to the customer in the bill tray. The detector unit is the key to the entire mechanism. Customers must agree not to tamper with or break the seal on the detector unit and agree not to make or attempt to make any repairs or adjustments to the sealed unit.

The second component is the control unit. It regulates the voltage, controls the timing, and receives impulses from the detector unit. It is also fused to protect the complete electrical system.

The third component is the coin dispenser. This unit, on impulse from the detector unit, actuates the coin slides of the coin magazine.

The fourth component is the coin magazine. It is the storage unit for the coin change dispensed on receipt of a valid \$1.00 bill by the detector unit. It consists of 16 coin tubes mounted in eight rows of two tubes each. Eight coin slides hold single coins from each row of two tubes until actuated by the coin dispenser. Impulse from the detector unit initiates a complete revolution of the payout motor, which in turn moves the



The dollar bill changer vends coins in multiples of nickels, dimes, and quarters from 16 tubes, and will deliver change only upon acceptance of genuine currency.

coin slide actuator and connected coin slides forward, releasing all single coins held on the coin slides. Completion of the payout motor's cycle returns the coin slide actuator and coin slides to their initial position, allowing the next coin in each loaded coin tube to drop into place on the coin slide for the next operation. The coin magazine consists of two quarter tubes, six dime tubes, and eight nickel tubes. Various change combinations can be achieved to meet the needs of the operator.

What does the future hold?

Developments such as the dollar bill changer can mean a great deal to the further rapid expansion of the automatic merchandising industry. One of the great advantages of the present unit is that it will help eliminate the loss of a sale because of the lack of coins. It is predicted that similar electronic devices of the future will perform unlimited functions, such as: accept bills of various denominations, vend merchandise, issue tickets, tokens and certificates, and implement a wide variety of automatic services for the vending industry.

Got a problem that calls for thread-cutting screws?

PARKER-KALON offers three new, improved thread-cutting screws for every application in every material



1 New, Improved P-K Type F*

... hardened thread-cutting screws developed for use in friable, granular or brittle material. The pilot, with its five tapping flutes, cuts a machine screw thread as the screw is turned in. The Type F is ideal for making fastenings to ferrous and non-ferrous castings, bronze or brass forgings, heavy gage sheet metals, structural steels, plastics and resin-impregnated plywood.



2 "Pentap" . . . the new, Improved P-K Type B-F*

(formerly F-Z) combining the five thread-cutting flutes of the Type F screw with the coarse-pitch, widely-spaced threads of the P-K Type B. The thread-cutting "Pentap" Type B-F distributes cutting pressure evenly, lets chips drop to the bottom of the hole, and prevents cracking of material. It is designed for making fastenings to comparatively thin sections and bosses in friable and brittle plastics.



3 P-K® Type L†

... is a completely new and improved thread-cutting screw developed by Parker-Kalon especially for use in Nylon. The Type L functions as a combination thread-cutting and thread-forming screw in that it cuts a small amount of the Nylon to allow the full diameter threads to form. Type L offers a particular advantage in Nylon assemblies which must be disassembled for service, because the P-K Type L can be removed and replaced without stripping or galling.

The five cutting flutes on the new, improved P-K Type "F" and "BF" reduce pressure development by 80 percent! The completely formed threads on these screws have sharper cutting edges, and 5 deep flutes that are of continuous depth. These features make for better clearance of the accumulated material and assure minimum stresses in driving, and avoid the possibility of stripping or galling.



FOR SEMS . . . and Neoprene or Nylon washer STAPS® in thread-cutting and thread-forming tapping screws, or machine screws in any kind of pre-assembled fastener-washer combination, P-K can supply them, too!

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*Patent Pending †U. S. Patent 2,750,346

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(Marketing Mgr., Vending Machine Controls.) Controls Company of America is pleased to introduce Robert V. Hansen, new marketing manager of CC's vending machine control line. Bob brings a wealth of experience to all the areas pictured below. We are sure that his "controlling interest" in these fields will be of positive assistance to you.



bottled beverages



hot and cold cups



dairy drinks



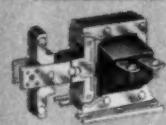
hot and cold canned food and vegetables



hot and cold lunches



SERIES 750 SNAPAC SWITCHES — Available in 3 types (pin plunger, lever action, panel mount). For limit, safety interlocking, door switch and control switch requirements. Also compact and economical series 755 Snapac switches for making and breaking 2 circuits.



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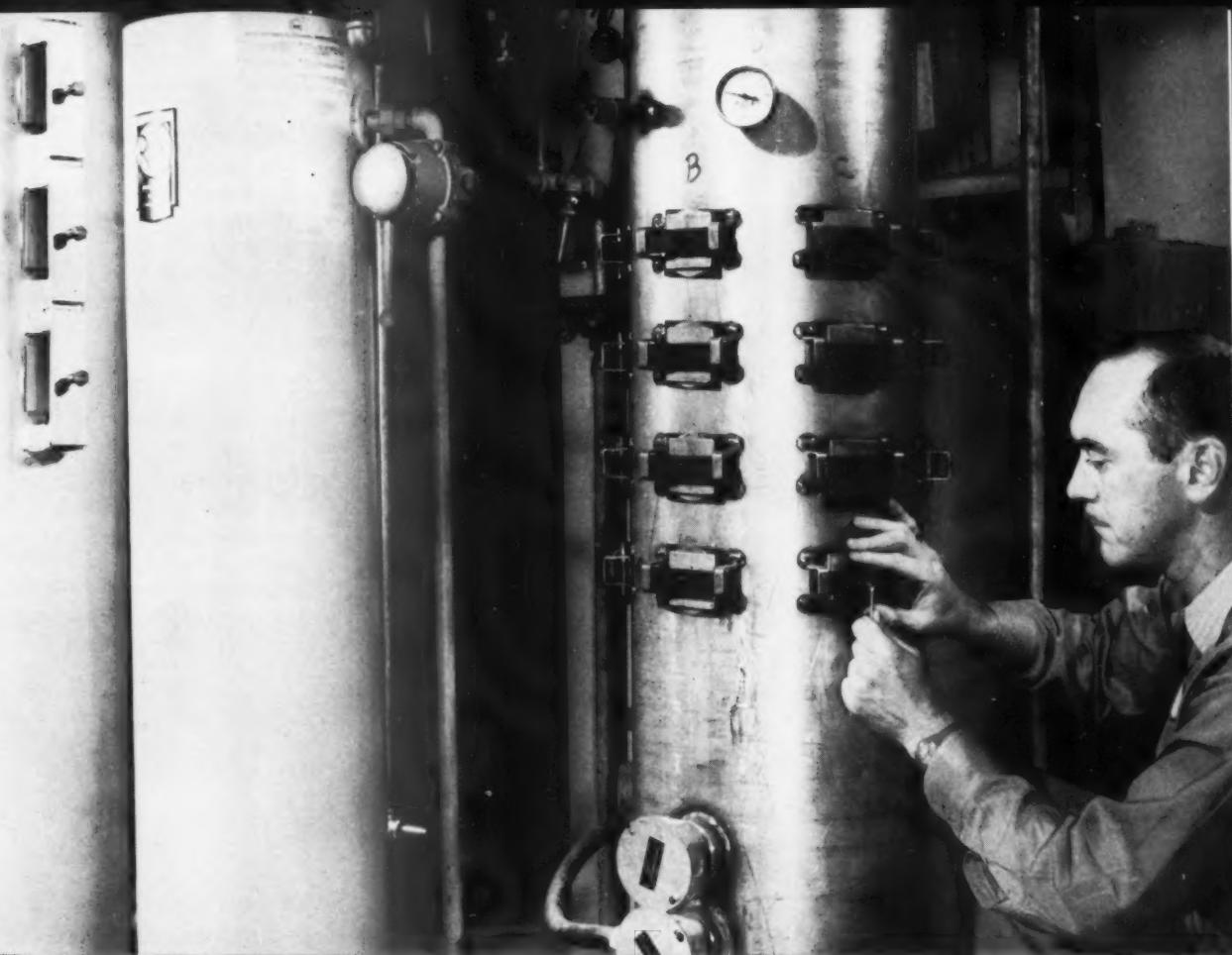
MODEL 206C THERMOSTATIC EXPANSION VALVE — For R-12, R-22 or Methyl. Capacity: $\frac{1}{4}$ thru $1\frac{1}{2}$ tons R-12. Part of a complete line of refrigerating controls that includes automatic expansion valves, distributors and "Trap-Dris" for dependable operation.



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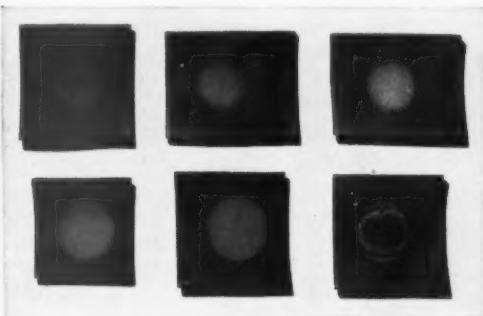


Accelerated time-tests under closely controlled conditions reveal relative qualities of glass coatings. "Porcupine" at the

right permits testing 24 sample plates at a time. Tank at left is checking samples cut from production water-heater tanks.



Autoclaves provide a still faster screening check on new coatings. Sample plates are exposed to abnormally high temperatures and corrosive agents simulating extreme service conditions.



Typical sample plates after testing. Here the importance of correct glass selection can be visually noted. Actually, precision tests reveal exact losses in weight of coatings from corrosion attack.



Trend to higher temperatures in water heating spurs search for better protective coatings. Accelerated tests run to 300° F., normal service life tests up to 180-190° F.

PROVING GROUND for water-heater glass coatings



Still better glass coatings are on the way—the result of Ferro's continuous research on protective linings for water-heater tanks.

And better protective coatings are *needed*, as water temperatures continue to rise to meet the needs of modern homemaking. Longer guarantees and warranties add further to the problem.

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studied as integral parts of a single development project. New frits are tried. New slit formulations developed. New metal cleaning and etching techniques worked out. New firing cycles explored. New equipment introduced and thoroughly tested.

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NEW

INDUSTRIAL LITERATURE

Soluble Cutting Fluid

A technical data sheet on a soluble cutting fluid is now available. According to the manufacturer, this water emulsifiable, heavy-duty cutting fluid is ideal for all cutting operations. Its base contains a high percentage of extreme pressure and anti-weld additives.

The product is said to minimize warehouse requirements, and is less expensive than the lowest priced straight cutting oil. For the data sheet, write Dept. MPM, L. R. Kerns Co., 2659 E. 95th St., Chicago 17, Ill.

Stainless Steel Booklet

A 36-page booklet gives detailed information on commercial stainless steel strip grades. It features comparative resistance tables of three stainless steel types and one aluminum type. In addition, stainless steel physical properties, surface finishes, fabrication, and maintenance are described. To obtain the booklet, write Dept. MPM, Washington Steel Corp., Washington, Pa.

Metal Laminate Brochure

A four-page, illustrated-in-color brochure describing the uses and properties of metal laminate is now available. It is claimed that the laminate can be welded, stamped, punched, or deep-drawn without damaging the vinyl or breaking the bond. Although it varies according to the metal base and thickness of the vinyl sheet, bond strength is said to be 35 pounds per inch. For this free brochure, write Dept. MPM, O'Sullivan Rubber Corp., Winchester, Va.

Air-Operated Pump

An air-operated, reciprocating-type stainless steel pump is described in an illustrated bulletin. Called the "Pogo SS," it is designed, according to the manufacturer, for the pumping and transferring of materials direct from the original 55-gallon containers, without costly spillage and waste, to the point of application. The pump weighs less than 20 pounds. For the bulletin, write Dept. MPM, Binks Mfg. Co., 3122 Carroll Ave., Chicago, Ill.

V-Belt Pulleys Circular

For original equipment manufacturers whose product includes one or more fractional horse power V-belt pulleys, a catalog containing specifications of standard sizes of single groove V-belt pulleys has been issued. For copies of the catalog, write Dept. MPM, Nagel-Chase Mfg. Co., 2811 N. Ashland Ave., Chicago 13, Ill.

Ball Trolley Bulletin

An enclosed, track type overhead conveyor, employing a unique trolley which rolls on a circulating path of steel balls passing between the trolley and track, is described in this illustrated bulletin. According to the manufacturer, application of the conveyor is general, but specially suited to use in ovens at temperatures at which lubrication is not satisfactory. Vertical and horizontal turns are made by short radius bends in the track without the aid of sprockets or wheels. Write for GAT Bulletin #22, Dept. MPM, General Automatic Transfer Co., 911 Craig Dr., Kirkwood 22, Mo.

Color Movie On Hand Gun

A sound and color movie which tells the story of a newly-developed electrostatic hand gun is now available for group showings. The 18-minute film shows the tool in operation, both in laboratory and in-plant production shots. The manufacturer states that the versatility of the hand gun is demonstrated by its application in a wide variety of uses, ranging from long outdoor lighting standards to small pieces of door hardware. To obtain the movie, write Dept. MPM, Ransburg Electro-Coating Corp., Box 23122, Indianapolis 23, Ind.

Permanent Magnet Catalog

Catalog #20, describing permanent magnets for microwave load isolators, has been released. It describes the basic sizes and shapes of "C" type magnets available for microwave application, as well as containing information to help solve load isolator design problems. For the catalog, write to Dept. MPM, Indiana Steel Products Co., Valparaiso, Ind.

Snap-Acting Switch

A free catalog describes details of a snap-acting switch designed for use where ambient temperatures are high and space is low. It is said that its small size permits gang-mounting, four to the inch, for multiple-circuit control in miniaturized apparatus. The switch can be furnished with leaf or leaf-roller actuator. Write Dept. MPM, Unimax Switch Div., W. L. Maxson Corp., Ives Rd., Wallingford, Conn.

Paint Paste Formulation

A 12-page booklet that is concerned with a general consideration of paint paste formulation and wet grinding techniques has been issued. All information used in the booklet is said to be supported by data from tests, industrial plant production records, and analyses of previously published technical journals. To obtain the booklet, write Dept. MPM, Patterson Foundry & Machine Co., East Liverpool, Ohio.

4-Way Toggle Switch

A free catalog describes a subminiature toggle switch which mounts in less than $2\frac{3}{8}$ " square. Advantages claimed of the switch are: multi-circuit control, single-hole panel mounting, toggle actuator, and subminiature size. The assembly comprises eight switches, secured in a mounting bracket with a four-way toggle mechanism. To obtain the catalog, write Dept. MPM, Unimax Switch Div., W. L. Maxson Corp., Ives Rd., Wallingford, Conn.

Two-Coat Roller Coater

Latest model roller coaters and graining machines are shown in a new bulletin just released. Featured prominently in the bulletin is a roller coater said to be the first practical unit to give the top surface of work two coats in one pass through the machine, virtually eliminating finish imperfections common to single roller coaters. To obtain the bulletin, write Dept. MPM, Dubois Machine Co., Ferdinand, Ind.

Literature Sheet On Furnaces

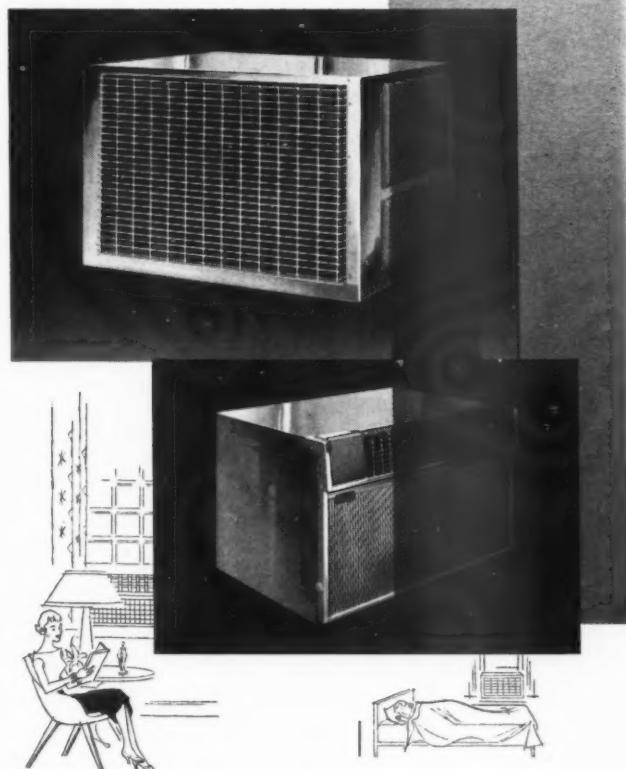
Heat processing furnaces, featuring high velocity heat flow in both electric and gas-fired models, are described in a literature sheet. The furnaces are said to be applicable in stress-relieving aluminum and steel, annealing, heat treating, tempering alloy steel, and galvanizing and nitriding. The literature is available by writing Dept. MPM, Despatch Oven Co., 619 E. 8th St., Minneapolis, Minn.

More New Literature on Page 76

Amazing new one-coat finish for Air Conditioners

DURACRON

THERMO-SETTING ACRYLIC ENAMEL



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Exceptional adhesion and resistance to corrosion and weather-wear, combined with easy-working properties, make DURACRON the perfect one-coat finish for air conditioners.

This amazing new acrylic enamel effects *substantial cost savings*—assures color-holding and exterior durability that *can be duplicated only by multiple coats of conventional baking enamel*.

DURACRON can be applied by a variety of high-speed methods—even on difficult-to-finish parts. Because of inherent hardness and flexibility, it withstands wear and tear of factory assembly and shipment. It provides unusual protection against many in-service hazards. High resistance to corrosive industrial and chemical fumes and salt air assures longer life and better service.

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A rapid method for comparing subsieve fineness of milled porcelain enamel

by E. E. Bryant and Gordon H. Johnson • FERRO CORP.

HERE HAS BEEN MUCH CONJECTURE as to the distribution of subsieve particle sizes due to variations in milling conditions, and as to what effects the fineness distribution has on problems encountered in applying porcelain enamels.

The time involved, or delicate manipulation, or the cost of equipment, has prevented the widespread use of methods available for determining accurately the subsieve fineness distribution of enamel slips. It is assumed that a low cost apparatus allowing determinations to be made with a minimum of time and effort should be of assistance in resolving the questions of fineness distribution. Also, it is assumed that a comparative distribution of sizes is a satisfactory determination, since it is generally more important to know how the distribution of one milling differs from that of an-

other, than it is to know the actual particle sizes. Therefore, the approach employed here is to devise low cost equipment which will allow determinations to be made quickly.

DESCRIPTION

The method involves a short term settling test. It might be described best as a combination of a modified Andreae pipette and a modified hydrometer method. The slip being tested is dispersed in a settling column and allowed to settle for a predetermined length of time. At the end of the elapsed time, four approximately-equal portions are withdrawn, one after the other, from the top of the column, and each is put into another container (hydrometer jar). The average specific gravity of each of these portions is measured, using a hydrometer.

As in all settling methods, the diameter of the settling particles is calculated by using Stokes' law. For the purpose of this test, Stokes' law may be expressed as:

$$D = \sqrt{\frac{307h}{(d-1)t}} \quad (1)$$

where

D = diameter of particles (microns).
 h = height of fall (centimeters).
 d = density of the frit*.
 t = settling time (minutes).

Equation (1) is used to calculate the average size of the particles present in each of the four portions. The height (h) is measured from the original surface of the suspension in the settling column down to the middle depth of each of the portions.

The hydrometer reading is related to the weight per cent of material present,

* In a multi-frit blend, the weighed average of the frit densities is used if the densities of the frits differ from one another by more than 0.05.

finer than a given particle size, by the equation:

$$W = \frac{(H-d_s)1000d}{(d-1)C} \times 100 \quad (2)$$

where

W = weight per cent finer than a given size.

H = hydrometer reading.

C = concentration of solids (grams/liter).

d = density of frit.

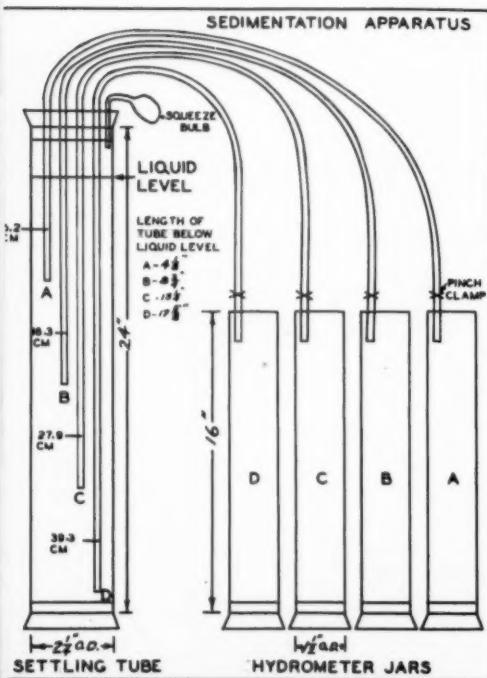
d_s = density of settling medium.

APPARATUS

The apparatus necessary for the method is inexpensive, readily-obtainable, and quite easy to assemble. It consists of a settling column and four hydrometer jars for collecting each of the portions withdrawn from the column. The portions are withdrawn through small diameter glass tubes that extend down to various depths in the column, and are held in position by passing through a rubber stopper inserted in the top of the column. A tube connected to a rubber squeeze bulb also passes just through the stopper and flow is started by gently squeezing the bulb. Rubber tubing, fitted with a pinch clamp, is used to connect each withdrawal tube to its respective hydrometer jar. The dimensions and arrangement of the tubes and jars are shown in Figure 1.

The settling tube has an outside diameter of $2\frac{1}{4}$ " and is 24" long. A rubber stopper (No. 11) is used to close the bottom and another stopper (No. 11) holds the withdrawal tubes in place at the top of the column. This column has a volume sufficient to hold 1000 ml. of suspension and yet is tall enough to give a useful gradation of particle sizes by sedimentation in practical settling times. Each hydrometer jar is a 16" length of $1\frac{1}{2}$ " (38 mm) glass tubing. A rubber stopper (size 8) is used to close the bottom of the tube. This jar contains a

FIG. 1



250-ml. portion in a column deep enough to float the hydrometer. Laboratory support rods and clamps are used to hold the column and the jars in a vertical position.

The depths at which the withdrawal tubes are placed were selected so that the fineness distribution could be determined at average particle sizes ranging from approximately 40 microns to 3 microns in settling times from 5 to 20 minutes (h in equation 1). The lengths of these tubes, below the liquid level, are $4\frac{1}{8}$ ", $8\frac{3}{4}$ ", $13\frac{1}{4}$ ", and $17\frac{5}{8}$ ", respectively. A mark, such as the bottom edge of a piece of tape placed at the proper length on each tube, serves to insure that the tubes are immersed to the same depth in each determination. These lengths result in an average height for the portions of 5.2 cm., 16.3 cm., 27.9 cm., and 39.3 cm., respectively.

The hydrometer used is capable of measuring specific gravities from 1.0000 to 1.0700 graduated for each 0.001 unit. It has an overall length of $12\frac{1}{2}$ inches. A hydrometer of this description is listed in the catalogues of most of the laboratory supply companies.

The only other equipment necessary are items normally found in a control laboratory.

PROCEDURE

Once the four values for the height of fall (h in equation 1) have been established by fixing the lengths of the withdrawal tubes, they become constants of the apparatus. The average size of the particles present in each of the portions, after the suspension has been allowed to settle for the chosen number of minutes, is calculated using equation 1. It is more rapid and convenient to compare the fineness distribution of milled enamels at the same particle sizes. If the settling time has been chosen for one frit, a milled enamel containing a frit of a different density* may be compared to the same particle sizes by changing the settling time according to the equation:

* Densities as determined with a LeChatlier flask are sufficiently accurate for the purpose of this method.

$$t_2 = \frac{d_1 - 1}{d_2 - 1} \times t_1 \quad (3)$$

where

t_1 = chosen settling time for frit of density d_1 .

t_2 = settling time necessary for frit of density d_2 .

It is necessary to determine the specific gravity of a 0.5 per cent solution of anhydrous tetra sodium pyrophosphate ($Na_4P_2O_7$) at room temperature (d_s in equation 2). This need be determined only once and the value taken as constant, providing that the suspensions being compared are at approximately the same temperature ($\pm 3^\circ F$).

Once the settling time has been chosen, the procedure is:

1. Dissolve 5.0 grams of anhydrous tetra sodium pyrophosphate ($Na_4P_2O_7$) in 700 to 800 ml. of distilled water.
2. Adjust the slip to the desired specific gravity and determine the per cent solids by weighing the solid material remaining after drying a weighed quantity of slip.
3. per cent solids =

$$\frac{\text{Weight of dried slip}}{\text{Weight of Slip}} \times 100 \quad (4)$$

Calculate the weight of the slip required to give 50 gms. of solids.

weight of slip =

$$\frac{50}{\text{Per cent solids}} \times 100 \quad (5)$$

If desired, the volume of slip necessary to give 50 grams solid may be used in place of the weight.

The per cent solids need be determined only once for each mill formula if all millings of that formula are adjusted to the same specific gravity.

3. Measure out the required amount of slip, preferably by weight, add it to the tetrasodium pyrophosphate solution and mix. Add distilled water until the total volume is 1000 ml. This results in a suspension containing 5 per cent solids and 0.5 per cent tetrasodium pyrophosphate as dispersing agent.

4. Mix and transfer the suspension to the settling column. Once in the column, agitate the suspension thoroughly by shaking and turning the column end over end for one minute.

5. Clamp the column in a vertical position and start the timer. Carefully insert the rubber stopper holding the withdrawal tubes, making certain that the mark on each tube is at the liquid level.
6. While the clock is running, the rubber tube from each of the withdrawal tubes can be placed in its respective hydrometer jar. This should be done carefully so as not to disturb the suspension in any way.*

7. When the desired settling time has elapsed, the pinch clamp on the withdrawal tube for the top portion is opened and the siphon started by gently squeezing the rubber bulb. Each portion is drawn in turn, the total time for drawing the four portions being about one minute.

8. The specific gravity of the suspension in each of the hydrometer jars is read by inserting the hydrometer immediately after thoroughly agitating the suspension.

9. Hydrometer readings are plotted against particle size as shown in the following example:

* The change in settling time can be neglected if t_2 differs from t_1 by a half minute or less.

(i) Density of frit — 2.60
(ii) Fineness: 0.5 gms./50 ml./200 Mesh

(iii) Specific Gravity of Slip: — 1.72
(iv) Per cent Solids:

- (a) Weight of Slip — 49.1 gms.
- (b) Weight of dried slip — 34.1 gms.

$$\text{Per cent solids} = \frac{34.1 \times 100}{49.1} = 69.4\%$$

- (v) Amount of slip needed to give
To Next Page →

FIG. 2

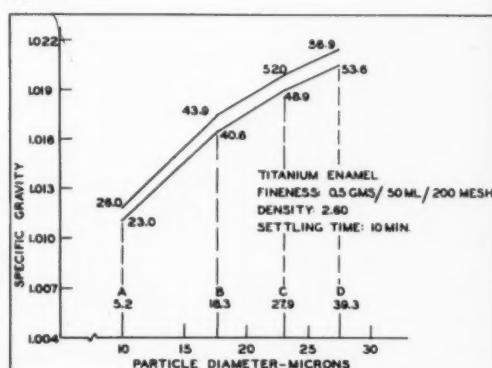


FIG. 3

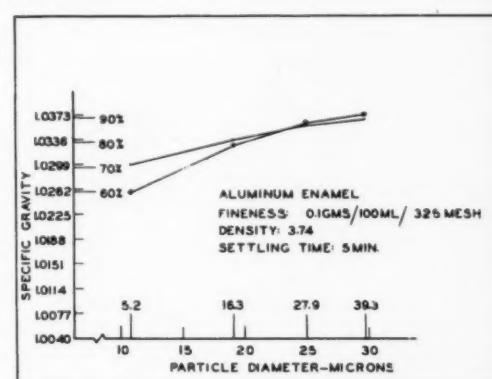
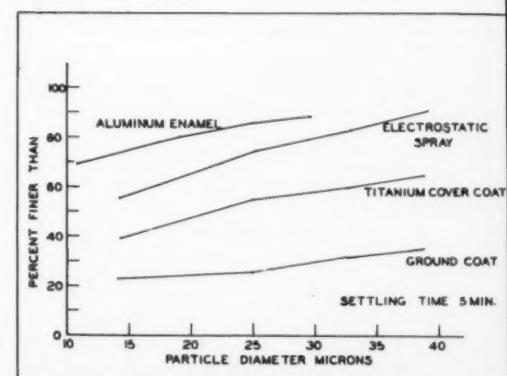


FIG. 4



50 grams of solids:

By Weight:

$$\frac{50 \times 100}{69.4} = 72.0 \text{ grams}$$

By Volume:

$$\text{Specific Gravity} = \frac{\text{weight}}{\text{volume}} = 1.72 = \frac{72.0}{\text{volume}}$$

$$\text{Volume} = \frac{72.0}{1.72} = 41.9 \text{ ml.}$$

(vi) Specific gravity of tetrasodium pyrophosphate solution: 1.004

(vii) Settling time: 10 minutes.

(viii) Calculations and results:

Portion	Height of Fall: cm.	Diameter Particle Microns	Hydrometer Reading	Weight Per Cent Finer Than
A	5.2	10.0	1.012	26.0
B	16.3	17.7	1.0175	43.9
C	27.9	23.1	1.020	52.0
D	39.3	27.5	1.0215	56.9

Consider portion D.

$$\text{Diameter} = \sqrt{\frac{(307) (39.3)}{(1.60) 10}} = \sqrt{754.1} = 27.5 \text{ microns}$$

(Equation 1)

Per cent less than 27.5 microns =

$$\frac{(1.0215 - 1.004) (2.60) 1000}{(1.60) (50)} \times 100 =$$

56.9 (Equation 2)

Since the relationship between weight per cent and hydrometer reading is a straight line, equation 2 need be calculated only once. If the hydrometer reading of the tetrasodium pyrophosphate solution (1.004) is made the base line (zero weight per cent), and a reading of 1.024 is equivalent to 65 per cent, a uniform scale of specific gravity can be spaced on the vertical axis. The other three hydrometer readings can then be plotted directly against particle size. When comparing subsequent millings of the enamel, the same coordinates are used and no calculations are necessary. If millings having different frit densities are to be compared, equation 2 should be calculated once for each density and the hydrometer readings plotted on their respective scale.

As an example duplicate runs on a milling of a titania cover coat enamel are shown in Fig. 2. The number at each of the plotted points is the weight per cent of the indicated particle diameter and were obtained by calculating equation (2) for each of the hydrometer readings. The numbers 5.2, 16.3, 27.9 and 39.3 indicated on the particle diameter axis are the heights of fall (h) used in calculating particle sizes by equation 1.

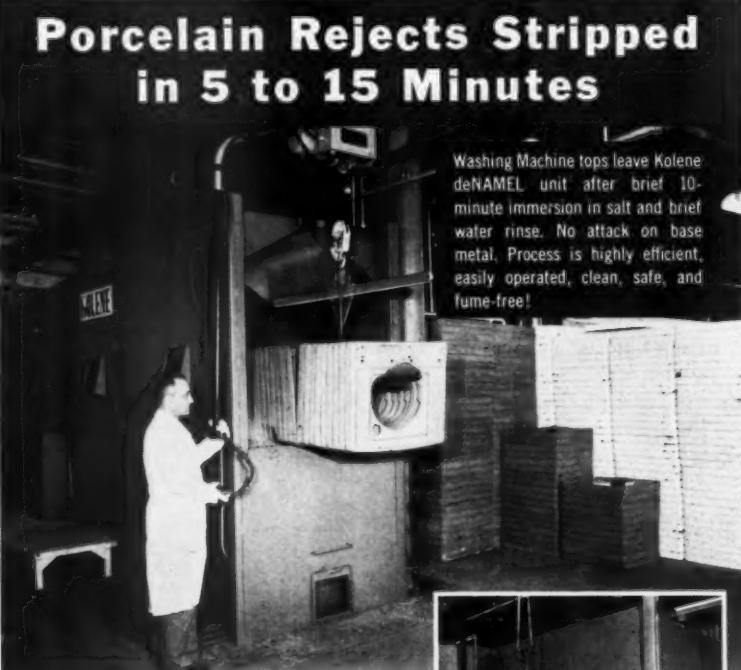
In Fig. 3 the results for two millings of the same aluminum enamel are shown. The curves show that there is a difference in the distribution of subsieve particles between the slips, although they would be considered as ground to the same fineness on the basis of a sieve test.

In Fig. 4 size distributions are shown for a ground coat, an aluminum enamel, a titanium cover coat ground for spray gun application, and a titanium cover coat ground for electrostatic spraying.

Although the method is designed primarily for comparing different millings of the same enamel, in which case calculations are made only once, and the data is plotted, as in Figs. 2 and 3, the data obtained can be quickly calculated to the absolute basis of weight per cent finer than a given particle size, as shown in Fig. 4. The results are a good approximation to those obtained by using the more elaborate, but time consuming, sedimentation methods.

The reproducibility of the method is sufficiently good so that real differences in the fineness distribution between millings will be detected. However, duplicate determinations should be made at least until one is experienced in its use.

Adapted for Metal Products Manufacturing
from a paper presented at the
20th Annual Shop Practice Forum
of the Porcelain Enamel Institute,
Urbana, Illinois, November, 1958.



New deNAMEL Process SAVES DOLLARS!

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Water heater line

→ from Page 31

body side holes while the sheet is still in the flat. The pierced sheets then feed along an inclined roller conveyor to a circle rolling machine for body forming. Another inclined conveyor then transports the formed bodies to a pair of automatic submerged arc welding machines where the side seams are welded.

After welding, the bodies are then roller-conveyed to a longitudinal reciprocating grinding machine where the interior of the body weld seams are ground flush with the body proper. This is a two-pass grinding operation, with the tank automatically carried forth and back across the grinding wheel.

The next stop is at the automatic spud welder. As already noted, one spud welder is used for welding the spuds into the tank body proper. The second is used for welding the spuds into the tank tops, which enter the tank production line at this point. In this operation, specially-designed tooling permits quick and accurate placement of the parts to be joined by welding. The operator then presses a switch, flux is automatically deposited in the weld area, and the welding head automatically traverses a complete circle, laying the weld bead in a single pass.

Beyond the spud welders, the tank tops are pressed into the bodies on a company-designed, hydraulically-actuated press, then the joined tank and top assemblies pass onward to two automatic submerged arc welders where a fillet weld is applied to the lapped junction between the body and top.

Dye penetrant inspection

While a form of "constant vigilance inspection" is maintained all along the body line to catch defects that are visible to the eye, the first comprehensive inspection of weld seams for leakage comes at this point — just after the tops and bodies are welded together. The welded assemblies feed from the two automatic welders onto an inclined roller conveyor, and the interior of each weld seam is immediately painted with a red dye penetrant inspection liquid. This is a highly penetrating liquid, and will quickly find its way through any leakage points and appear on the outside of the tank before the tank reaches the inspection station. At the inspection station, a white developer coating is painted on the outside of all weld seams, and any dye penetrant which has penetrated through a weld seam leak will appear brilliantly red

on the surface of this white developer coating. The applied inspection mediums are subsequently cleaned away in the grit blasting operation on the tanks just prior to enameling.

Meanwhile, the flue and bottom assemblies have been fabricated in an auxiliary department and join the top and body assemblies in the enameling department. Beyond the enameling department, a pair of automatic submerged arc welders are used to join the flue and bottom and body and top assemblies. One of these welders joins the bottom to the tank, the other the

flue to the top. The "closed" assemblies are then air tested at from 75-80 psi, using a soap solution on the exterior of the seams to check for any leaks. After testing, the water heater tanks are placed in a specially-designed tapping machine which taps all threads in a single operation.

After this tapping operation, the completed tanks join the jackets, and other miscellaneous parts produced on the second fabrication line, in the final assembly department. Here the finished heaters are completely assembled, inspected, and made ready for shipment.



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Gas appliance sales topping 1959 forecast

GAMA revises estimate to 15 per cent over 1958

AN MPM STAFF REPORT

EXCLUSIVE MPM PHOTOS

THE GAS APPLIANCE MANUFACTURERS Association's 24th annual meeting held at the Americana Hotel, Bal Harbour, Florida, April 1-3, was one of optimism and challenge. It was a well-attended meeting with 300 delegates, 50 greater than were in attendance at last year's meeting held at the Greenbrier.

In his opening remarks, Clifford V. Coons, executive vice president, Rheem Mfg. Co., and retiring president of GAMA, stated, "Events for the first quarter of the year make it reasonable to assume that combined shipments of household, commercial, and industrial gas equipment will top the 1958 total by nearly 15 per cent instead of the 9 per cent predicted last December." Coons recalled that the industry had been among the first to turn the recession corner with a rousing final quarter in 1958 when all but three of its 22 product divisions showed gains ranging from 8 to 32 per cent. "Thus far this year, the pace of that quarter has continued. In fact, it has improved," he stated.

Ranges up 22 per cent

Coons went on to explain that results of a recent telegraphic poll of members show gas range shipments for three

Left to right: Donald Campbell, C. A. Olson Mfg. Co.; W. J. Wildren, The Roberts Brass Mfg. Co.; and Charles Stainton, Controls Co. of America.



months ending February 28 up 22 per cent from the same period last year; combined gas central heating figures (for boilers, furnaces and conversion burners) up 37.6 per cent; and gas water heaters up 14.6 per cent. An increase of 48.8 per cent in shipments of gas clothes dryers was recorded in the first two months of this year.

"If there is no change in the pattern of consumer demand, which in the 1958 final quarter showed better than seven out of ten homes adopting gas for central and direct heating, three out of five buying gas cooking equipment, and gas water heaters favored three-to-one over competitive types, the 1959 picture is the most promising we've ever entered," he said.

Four gas refrigerators now

For years, he said, there was only one gas refrigerator on the market. Now there are four brands, each planning to merchandise aggressively before the end of the year. Two different types of gas air conditioning equipment are ready for the consumer. Last year only



Left to right: Eugene T. Crandall, The Lux Clock Mfg. Co.; Clifford V. Coons, Rheem Mfg. Co. and retiring GAMA president; and Donald R. Goetchius and John R. McCord, Ferro Corp.

one had reached the sales-reporting stage.

Doorway to the sixties

In his talk before the convention, E. A. Norman, president, Norman Products Co., incoming president of GAMA, stated, "The year ahead stands as a year of opportunity — a year of challenge — and a year of decision. Most important, the year 1959 stands as the starting point of a new era of economic development. It stands as the doorway to the

soaring sixties." He went on to state that every time you hear the remark that we are a progressive industry, keep in mind that this means we are a sales-minded industry. We need more new products or radically new concepts, and we need them now. "Let's stop bragging about the fact that we are the nation's fifth largest industry, and start informing the consumers *why* we are the fifth largest industry. And let's dramatize the facts and accomplishments which moved us from sixth to fifth place among America's largest industries."

Manufacturers of household gas appliances and equipment invested well over 35 million in product design, development, and testing facilities in 1958, and are apparently spending at least that amount in 1959. He pointed out that this figure, equivalent to nearly four per cent of the industry's volume as compared with a two-per cent average among all consumer industries, does not include expenditures for research and product testing through the central laboratories of the AGA.

Other comments

One official commented that in his opinion the top news of the convention is the progress of the "gold star" award designation in the range division, and the apparent acceptance of the gold star by the public, dealers, utilities and everyone concerned with upgrading. The gold star idea which means technical improvement of all products, a general upgrading of the industry, and its offerings, was spread across the industry to all product categories. He stated that, if signs shown by the progress of gold



Left to right: Ed Kern, Pacific Coast Gas Association, and E. A. Norman, Norman Products Co., president-elect of GAMA.

star in ranges is any indication, the record increase in shipments by each of the product divisions of GAMA is an important sign.

He also pointed out that industrial gas burning equipment is showing a terrific increase. There has been a hold-up in capital investment, as everyone knows, and now the "dam is broken" and industrial equipment is starting to sell again at a fast pace.

A combined promotion fund

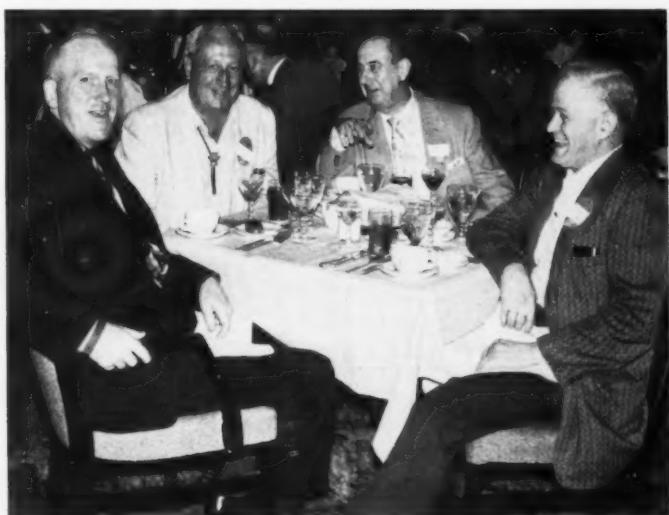
All units of the Gas Appliance Industry met at the GAMA meeting for consideration of a combined promotion fund to be centered on gas home heat-

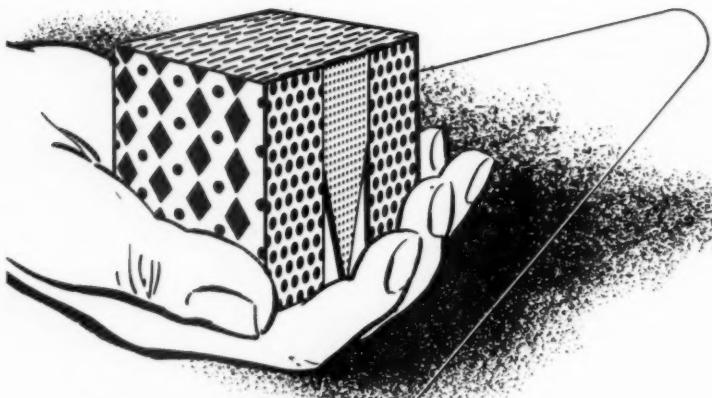
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Direct Heating Equipment Division in session in Bermuda Room, Americana Hotel.

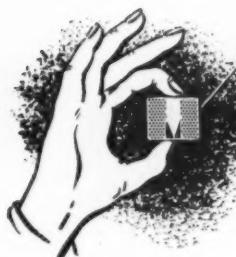


Left to right: J. Theodore Wolfe, Baltimore Gas & Electric Co., president, AGA; A. B. Ritzenthaler, The Tappan Co.; Henry Honer, Wedgewood-Holly Corp.; and E. M. Hommel, The O. Hommel Co.





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New Literature

→ from Page 68

Stainless Steel Tubing

Stainless steel seamless tubing in a wide range of selection is available that reportedly can meet exact requirements and solve high temperature or corrosion problems. This tubing comes in all stainless grades including 309, 317, 318, 310, 416 and 446. It is also available in high strength alloys such as A-286, in vacuum melted steels, and in custom analyses grades such as low cobalt with .01 or .05 max. and small boron additions to standard types. For further information contact Dept. MPM, Allegheny Ludlum Steel Corp., Oliver Bldg., Pittsburgh 22, Pa.

Cutting-Off Machine Bulletin

A new cutting-off machine is said to cut steel and other metals, glass, stone, plastic, and quartz quickly and accurately. Applicable to every type of industrial and laboratory installation, the unit is simple to operate, even for unskilled personnel. Special features include a miter gage & scale; foot-operated control; spray heads that play a steady stream of coolant to the cutting wheel; adjustable stop to permit cutting of exact duplicate pieces; cutting table mounted on ball bearings; etc. Full information is contained in Bulletin 2237-W-2, free on request from Dept. MPM, American Instrument Co., Inc., 8030 Georgia Ave., Silver Spring, Md.

A-C Small Motors Catalog

Four types of unidirectional non-gearred, two open types of unidirectional geared motors plus an enclosed type are listed in a new a-c small motors catalog. Other features of these motors are: high starting torque, quiet running, compact, large oil reservoirs, precision hobbed gears, porous bronze or ball bearings and a wide range of gear ratios. For the free booklet write Dept. MPM, Barber-Colman Co., 1292 Rock St., Rockford, Ill.

Thermo-Setting Acrylic Enamel

Exceptional adhesion and resistance to corrosion and weather-wear, combined with easy working properties make this brand of thermosetting acrylic paint a good one-coat finish for air conditioners, according to the manufacturer. The finish is said to effect substantial cost savings and assures color-holding and exterior durability. Because of claims of inherent hardness and flexibility, it withstands wear and

tear of factory assembly and shipment. High resistance to corrosive industrial and chemical fumes and salt air helps assure longer life and better service. For further information contact Dept. MPM, Pittsburgh Plate Glass Co., Industrial Finishes Div., 1 Gateway Center, Pittsburgh, Pa.

Composite Product Bulletin

A 16-page composite product bulletin containing a description of products for air filtering, cooling, heating, cleaning, exhausting, and moving has been released. The bulletin emphasizes the fact that optimum environment for specific conditions in any plant or building can be coordinated and controlled from beginning to end with a complete "family" of products and services. The bulletin is available upon request from Dept. MPM, American Air Filter Co., Inc., 215 Central Ave., Louisville 8, Ky.

Anti-Corrosive Pigment

An anti-corrosive pigment, made up of basic lead silico chromate, is described in an eight-page, free, illustrated brochure. According to the manufacturer, it is ideally suited for the formulation of primers, intermediate, and finish coats, providing maximum rust protection in each coat. Applications include paints for protecting bridges, water tanks, towers, and metal underwater supports and structures. To obtain the brochure, contact Dept. MPM, The Eagle-Picher Co. American Bldg., Cincinnati 1, Ohio.

Pneumatic Screwdrivers and Nutsetters

Bulletin #68, describing a line of pneumatically-operated screwdrivers and nutsetters, is now available upon request. For the illustrated bulletin, write Dept. MPM, Airetool Mfg. Co., 328 S. Center St., Springfield, Ohio.

Steel Alloys Bulletin

The eighth in a series of design bulletins concerned with the uses of steel alloys is now available. It describes recent advances and gives information on the effects of heat treating, surface finishes and tolerances, effect on physical properties, and gives an up-to-date list of steel alloys and super hard metals that can now be chemically milled. To obtain a free copy, write Dept. MPM, United States Chemical Milling Corp., 1700 Rosecrans Blvd., Manhattan Beach, Calif.

Self-Locking Coupling Nuts

The first fluid coupling nuts to, it is claimed, successfully incorporate positive, self-locking action are described in a four-page, illustrated bulletin. Designed to maintain leakproof joints on critical fuel, hydraulic control, and other fluid lines, the one-piece, self-locking fasteners are said to eliminate the need for the current process of drilling through coupling nuts, then tying them down with safety wire to prevent vibratory loosening and leakage. For a copy of the bulletin, write Dept. MPM, Box 1089, Standard Pressed Steel Co., Jenkintown, Pa.

Charting and Layout Tapes

A descriptive folder showing 54 different solid color and pattern tapes for charting and layouts is now available. Fourteen solid color tapes may be obtained in widths ranging from 1/64 inch to 2 inches; pattern tapes can be had in widths from 1/32 inch to 2 inches. For the folder, write Dept. MPM, Labelon Tape Co., Inc., 450 Atlantic Ave., Rochester 9, N.Y.

Buffing Bulletin

A two-color, 20-page bulletin describing buffing and polishing compounds is now being offered. More than 150 compounds, including those for buffing and polishing chromium, stainless steel, and steel, are featured. Copies are obtainable by writing Dept. MPM, Hanson-Van Winkle-Munning Co., Church St., Matawan, N.J.

Gas Research Report

A research report on "Regenerative and Recuperative Devices For Industrial Gas Burning Equipment" has been issued. The report is said to be of value for the many processing industries using gas fuel. To obtain the report, write Dept. MPM, American Gas Assn., 420 Lexington Ave., New York 17, N.Y.

Spindle-Type Machines

A catalog describing five spindle-type finishing machines, designed to give continuous "in-line" production of precision finished parts, has been published. The new machines are said to enable precision finishing of complex, high quality components such as gears, bearing cages, and pump rotors at faster, more continuous production rates than heretofore possible. For the catalog, write Dept. MPM, Queen Products Div., King-Seeley Corp., Albert Lea, Minn.

Can You Use These NEW JUNCTION TERMINAL BUSHINGS?



1. On final production test lines, quick-disconnect feature has saved time and simplified removal of defective parts.
2. Color coded, the bushings speed assembly and insure correct harness connections.
3. They speed up and simplify the removal and testing of component assemblies.

THREE TERMINAL STYLES made with existing female terminations



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Send for samples and
try them on your
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HEYCO STRAIN RELIEF BUSHINGS

NEW

SUPPLIES & EQUIPMENT

Blind Fastener Grips Smaller Widths

A self-adjusting blind fastener, whose threads grip material $\frac{3}{8}$ inch thick or less, is now available. Called the Jack Nut, it is made to grip evenly on rough and curved as well as smooth and level surfaces.

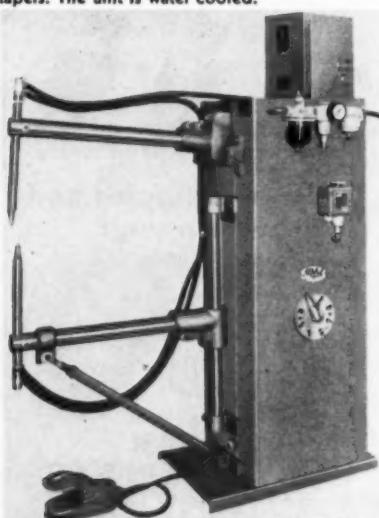


According to the manufacturer, the fastener can be used either as a rivet or a blind fastener in expansion space. It provides nutplates for attachment screws, and anchorage is permanent, permitting screws to be removed and replaced. Two lengths are available: short for thicknesses to $\frac{3}{16}$ inch, and long for thicknesses to $\frac{3}{8}$ inch.

For further information, contact Dept. MPM, Molly Corp., Reading, Pa.

Rocker-Type Welder

An air-operated, rocker arm-type welder is available in capacities from seven and one half to 75 KVA. It is equipped with heat selector with full load capacity, extra heavy rear switch rod, contact assembly, air cylinder, standard electrode holders, and electrodes and Morse tapers. The unit is water cooled.



For further information, contact Dept. MPM, Alphil Spot Welder Mfg. Corp., 1058 Pacific St., Brooklyn 38, N.Y.

Thermo-Setting Adhesive

A special thermo-setting adhesive for bonding vinyl to metal has been developed. It is said to be so strong that, when properly applied with heat and pressure, it withstands drawing pressures exceeding the fracture point of the metal itself.

According to the manufacturer, its uses include vinyl cladding methods for steel, magnesium, and aluminum in the manufacture of such products as TV and radio cabinets and cases, automobile fixtures and trim, luggage, card tables, and chairs.

For further information, contact Dept. MPM, Stanley Chemical Co., 401 Berlin St., East Berlin, Conn.

High Speeds With Hopper-Feeder

Feed speeds far in excess of conventional gravity methods are claimed to be obtainable with this hopper-feeder through the combination of a continuous operating vane-type elevator aligning and conveying cylindrical stock from the hopper, and a powered out-feed mechanism. It is said to feed any cylindrical part or stock length bar, tube steel, copper, brass, aluminum, and fiber.



For further information, contact Dept. MPM, Clark Industries, P.O. Box 314, Delaware, Ohio.

Pistol-Grip Pliers

Greater control in assembly jobs involving small-sized units is claimed with pistol-grip pliers. The tool has a locking arrangement that permits its jaws to achieve, it is said, a non-slip grip on small washers, brads, screws, wires, and other hard-to-handle objects.



Departure from the usual plier design permits the use of the tool as a vise, when performing operations where both hands must be kept free. For further information, write Dept. MPM, Handicraft Tools, Inc., 48-41 Van Dam St., Long Island City 1, N.Y.

DS-9 Bright Dip Puts Specular Finish on Stainless

Stainless steels in the 300 series can now be finished with a bright dip which, according to its manufacturer, puts a specular finish on stainless steel without buffing or polishing.

Called the DS-9 Bright Dip, this process, it is claimed, can eliminate buffing, electroplating, or grinding on many parts, remove scale from stainless steel forgings, remove weld scale and discoloration, and put a brilliant finish on intricate, hard-to-polish shapes in the 300 series.

For further information, write Dept. MPM, The Diversey Corp., 1820 Roscoe St., Chicago 13, Ill.

Roll Forming Machine

A small roll forming machine, called model 150, has been designed for such operations as moldings. It has welded wheel construction, spur gear design, and spindles mounted on anti-friction bearings which are hardened and ground. For further information, contact Dept. MPM, Dahlstrom Machine Works, Inc., 4227 W. Belmont Ave., Chicago 41, Ill.

Unique Snap Switch

A snap-acting switch with a claimed unique basic mechanism is now available. The switch is said to be the only unit in which the bias and stresses which produce the snap action are inherent in a single piece beryllium copper blade. The fixed mounting of the blade is midway between the actuating and contact ends.



For further information, contact Dept. MPM, Detroit Controls, 5900 Trumbull Ave., Detroit 8, Mich.

Pneumatic Screwdrivers

A series of four pneumatic screwdrivers designed particularly for industrial production applications has been developed. A straight type with a lever throttle, its design permits using the tool in cramped quarters, and is said to be particularly suitable for applications where the tool is suspended above the work.



For further information, contact Dept. MPM, Airetool Mfg. Co., 328 S. Center St., Springfield, Ohio.

enameling costs can be cut

*reject percentage can be reduced
...efficiency can be boosted*

● Want proof? There's a very logical reason why Ing-Rich Frits along with Ing-Rich "Know How" is accomplishing worth-while economies for our customers.

Here at Ing-Rich the buck can't be passed. We know that there is no such thing as a "foolproof frit." We know that the almost perfect conditions prevailing in a laboratory are seldom achieved under practical working conditions ...

so, our top flight ceramic engineers must prove their case to the technicians in our own large job enameling plant.

Ing-Rich Frits and Ing-Rich "Know How" can cut your enameling costs. Ing-Rich Ceramic Engineers, graduates also of the important school of practical experience, stand ready to come into your plant and prove our case.

INGRAM-RICHARDSON, INC.
OFFICES, LABORATORY AND PLANT • FRANKFORT, IND.





Dahlstrom Appoints 3 New Representatives

Dahlstrom Machine Works, Inc., Chicago, has announced three new sales representatives. They are: Hart Industrial Supply Co., 726 W. Grand Ave., Oklahoma City, Okla.; Delaware Valley Machinery Co., 2323 Maplewood Ave., Willow Grove, Pa.; and Austin-Hastings Co., Inc., 226 Binney St., Cambridge 42, Mass.

Blackstone, Thor Sign Agreement

R. A. Lenna, president of Blackstone Corp., Jamestown, N.Y., and Fred McGovern, president of Thor Industries, Ltd., Toronto, have jointly announced the establishment of a manufacturing agreement between the two organizations.

Under the agreement, Blackstone's patents, engineering, and research facilities will be made available to Thor for the manufacture and sale of home laundry products throughout Canada.

Harper Adds Subsidiary

H. M. Harper Co., Morton Grove, Ill., has announced the establishment of a wholly-owned subsidiary in Canada to handle non-ferrous and stainless steel products. The subsidiary will be known as Harper Everlasting Fastenings, Ltd., and will be headed by Will W. Boyes, vice president of H. M. Harper.

Kaiser Steel Output Sets Record High

Production and employment at Kaiser Steel Corp. have reached alltime highs, according to Jack L. Ashby, vice president and general manager. March production at the Fontana, Calif. plant hit a record 185,000 ingot tons, including 51,000 tons of steel from the new oxygen steelmaking facilities.

Ashby said that the figures were made possible by Kaiser's added facilities, and by a strong pickup in steel demand.

Meeting, Exposition on ARI Agenda

The annual meeting of the Air-Conditioning and Refrigeration Institute, scheduled May 3-6 at Hot Springs, Va., will be devoted primarily to business sessions to discuss changes in the Institute's internal organization. This will be accomplished through amendment of its by-laws, according to Don V. Petrone, president.

Meanwhile, R. H. Luscombe, chairman of ARI's show committee, has announced a program of conference-type meetings for the discussion of developments in the industry, technical matters, sales and installation problems, and applications at the 11th ARI exposition, November 2-5 in Atlantic City.

Midland-Ross Acquires Nelson Metal Assets

Midland-Ross Corp. has acquired, in a cash transaction, the assets of the Nelson Metal Products Co., Inc., Grand Rapids, Mich., producer of zinc and aluminum die castings for the automotive industry.

According to Wade D. Harris, president of Midland-Ross, the new acquisition will operate under the direction of the Owosso, Mich. Div., headed by David E. Walbert, vice president and general manager.

Metalcraft Moves

Metalcraft Products Co., Inc. has moved to a new and larger plant in Philadelphia, adding automated equipment to increase its production, according to Nathan Bloom, president of the company. The new plant, located at 6225 State Rd., more than triples Metalcraft's former manufacturing area.

Indoor Climate Center Revealed By Carrier



A device which enables the home owner to monitor outside weather, control indoor temperatures, and regulate the operation of heating and cooling equipment from a single location has been announced by Carrier Corp.

Designed for wall-mounting, the 8" x 14" instrument gives readings of outdoor and indoor temperatures, barometric pressure and relative humidity, controls both heating and cooling cycles, and provides automatic fan operation and pre-set adjustments of temperature during day and night hours.

Warning lights flash if the filter is clogged, the pilot light goes out, the oil burner fails to ignite, or the condensate drain is plugged.

Leighton Company Appointed

Roll Formed Products Co., Youngstown, Ohio, has appointed Harry W. Leighton Co., 5800 N. Western Ave., Chicago, as its representative in Illinois and part of Indiana. The Leighton Co. will sell Roll Formed's line of ferrous and non-ferrous metal shapes and tubing.

Midwest Enameling Club To Hold "Maypole Party" At Lincolnshire



Informality will be the order of the day at rolling Lincolnshire Country Club, Crete, Ill., scene of this year's Midwest Enameling Club "Maypole Party" May 22. A golf outing, dinner, "old time" entertainment, and prizes will highlight the event. For reservations, contact Jack Novak, Main Laboratory, Inland Steel Co., East Chicago, Ind.

Tappan Plans \$3,700,000 Expansion Program

A \$3,700,000 plant expansion program based on current production needs has been unfolded by the Tappan Co. To meet the increased demand for Tappan products, the company plans to increase total production capacity of the Mansfield plant by 30 per cent, and the Murray Mfg. Co., Murray, Ky., by 50 per cent.

According to W. R. Tappan, president and general manager, sales for the first three months of 1959 ran 38 per cent ahead of sales for the same period in 1958.

Admiral Sales Up In First Quarter

Higher sales and a profitable first quarter were reported by Admiral Corp. at its annual stockholders' meeting last month. President Ross D. Siragusa stated that the company's estimated sales are 15 per cent better than the same period one year ago.

According to Siragusa, television shipments are up 37 per cent, phonograph shipments 55 per cent, and appliance shipments, excluding air conditioners, up 20 per cent.

Turco Division

To Market Coatings

Expansion of its Chem-Mill Div. to market a line of specialized coatings has been announced by Turco Products, Inc., Los Angeles, manufacturer of industrial chemical processing compounds. The new line will be marketed by the newly-established division to aircraft, missile, and associated industries, as well as to industries not associated with the military.

George H. Fox, Jr., formerly sales manager for the division, will become division manager.

Rheem To Form Chilean Affiliation

Rheem Mfg. Co. has completed plans to form an affiliated company in Chile, with Rheem becoming the managing partner. A. Lightfoot Walker, Rheem president, announced that the new company will produce 55-gallon drums and smaller containers mainly for oil companies in Chile at a \$500,000 plant located in Maipu, near Santiago, Chile.

Rafael Budnik, Chilean industrialist, and other interests are participating with Rheem in the enterprise, which is scheduled to start producing the steel shipping containers by July 1.

Lewyt Sales Up 10.3 Per Cent

Sales of Lewyt vacuum cleaners for the first quarter of this year increased 10.3 per cent over the same period last year. Henry Dorff, vice president in charge of sales and merchandising, reported that the introduction of an electronic vacuum cleaner, along with two other new models, stimulated the increase.

Design Engineering Show Opens in Philadelphia

A \$10,000,000 exhibit of some 12,000 products of interest to research and development executives and engineers will be unveiled at the Design Engineering Show May 25-28 in Philadelphia.

Four-hundred companies will exhibit products, and about 4,000 experts will answer questions of the expected 18,000 visitors. A four-day conference staged by the machine design division of the American Society of Mechanical Engineers will be held concurrently with the show.

New Warehouse For Westinghouse

Construction is under way for a new supply depot for appliances and tele-

Elsner, Chicago Vitreous Corporation, Dies

Richard A. Elsner, Chicago Vitreous Corp., died April 7. He had been with the Chicago company since 1927, serving as enameling superintendent, Steel Buildings Division, in his last capacity.

vision to serve Westinghouse Electric Corp.'s Eastern market. Located next to Westinghouse's major appliance plant in Columbus, the warehouse expected to reduce by one-third the time required to deliver appliances to dealers.

Steel Production Sets Record High

March steel production of Republic Steel Corp. topped the million ton mark for the first time when the company produced 1,014,984 tons of ingots, according to T. F. Patton, president. This compares with the previous record high of 941,844 tons achieved in October, 1956.

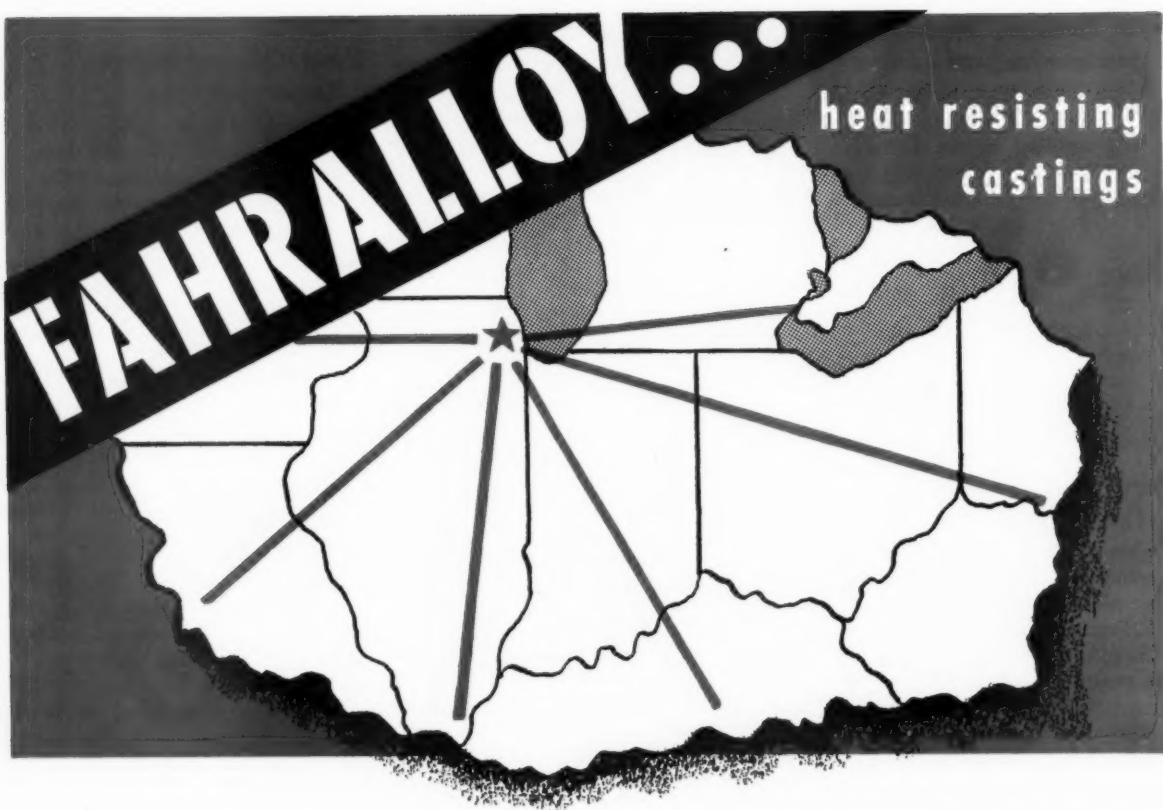
Open hearth, blast, and electric furnace records were achieved, with open hearth production leading the way at 801,732 tons.

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United Steel & Wire Celebrates Bi-Centennial



Gathered around to enjoy a piece of United Steel & Wire Co.'s 50th anniversary cake are (left to right), Louis C. White, production manager; Dewitt C. Kies, secretary and dairy line manager; Claude A. Perkins, treasurer; and Lowell B. Genebach, president. The company has achieved many firsts in the bakery, dairy, and shopping equipment lines.



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- PUMP MANUFACTURERS
- STEEL



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INDUSTRY MEETINGS

AIR CONDITIONING

Air Conditioning and Refrigeration Institute's Board and Annual Meeting, The Homestead, Hot Springs, Va., May 3-6, 1959.

PORCELAIN ENAMEL

Porcelain Enamel Institute's Mid-Year Divisional Conference, Edgewater Beach Hotel, Chicago, Ill., May 13-14, 1959.

CERAMICS

Sixty-first Annual Meeting of the American Ceramic Society, Palmer House, Chicago, Ill., May 17-21, 1959.

ENAMELERS

Midwest Enameler's Club Maypole Party, Lincolnshire Country Club, Crete (Chicago suburb), Ill., May 22, 1959.

MECHANICAL ENGINEERS

The American Society of Mechanical Engineers' Design Engineering Conference and Exhibit, Convention Hall, Philadelphia, Pa., May 25-28, 1959.

APPLIANCE MANUFACTURERS

Institute of Appliance Manufacturers, Netherland-Hilton Hotel, Cincinnati, Ohio, June 1-3, 1959.

MATERIAL HANDLING

American Material Handling Society, Inc.'s Technical Sessions, in conjunction with The Material Handling Institute's Exposition of 1959, Cleveland Public Auditorium, Cleveland, Ohio, June 9-12, 1959.

PRESSED METAL

Pressed Metal Institute's 1959 National Sales Seminar, Bedford Springs Hotel, Bedford, Pa., June 11-12, 1959.

STOVES, FURNACES

The Canadian Institute of Stove and Furnace Manufacturer's Summer Conference, The Chantecler, Ste. Adele, Quebec, Canada, June 22-23, 1959.

HOUSEWARES

National Housewares Manufacturers Association's 31st National Housewares Exhibit, Convention Hall, Atlantic City, N. J., July 13-17, 1959.



PROVIDES 50% PAINT SAVING (over the former dip method) in the finishing of KAY-MAR DINETTE FURNITURE



A high quality, long-lasting finish is applied to tubular chair frames as they make a loop around the Ransburg No. 2 Process reciprocating disk in the finishing department at Kay-Mar Industries.

● Kay-Mar Industries, Cassopolis, Michigan, switched from the dip method to Ransburg Electrostatic Spray Painting because they wanted to improve the quality of the finish on their metal furniture line.

Now, with electrostatic spray painting, they get a heavier, more uniform application, which was not possible with former dip. With electrostatic, they are able to use metallic coatings with higher metal content. In their magazine advertising to the mobile home industry, they proudly say: "Finest finish in the industry at no additional cost to you!"

Electrostatic provides other advantages at Kay-Mar. They picked up some additional—and much needed—floor space when dip tanks were removed. Their insurance rates were reduced because of improved "housekeeping" conditions. Frequent color changes are made quickly and simply, and rejects—which used to run 1 1/2%—are reduced to less than a quarter of one per cent.

NO REASON WHY YOU CAN'T DO IT, TOO!

Let us test prove the advantages of automatic electrostatic spray painting on your products in our complete laboratories. No obligation. Call or write for our No. 2 Process brochure, which shows a variety of automatic painting installations on a wide variety of products. Or, if your production doesn't justify automatic painting, let us tell you about the new Ransburg No. 2 Process electrostatic hand gun, now widely used by both large and small manufacturers.



RANSBURG
Electro-Coating Corp.
Box-23122, Indianapolis 23, Indiana

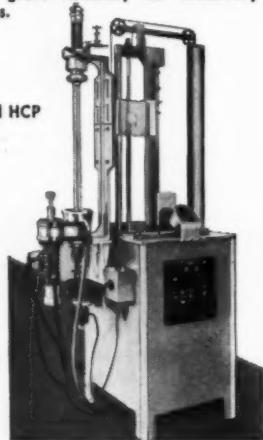
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UNITS

LepeL induction heating equipment represents the most advanced thought in the field of electronics. It is the most efficient source of heat developed for numerous industrial applications. You are invited to send samples of work with specifications. Our engineers will process and return the completed job with full data and recommendations without cost or obligations.

FLOATING ZONE UNIT FOR METAL REFINING AND CRYSTAL GROWING

A new floating zone fixture for the production of ultra-high purity metals and semi-conductor materials. Purification or crystal growing is achieved by traversing a narrow molten zone along the length of the process bar while it is being supported vertically in vacuum or inert gas. Designed primarily for production purposes, Model HCP also provides great flexibility for laboratory studies.

Model HCP



Features

- A smooth, positive mechanical drive system with continuously variable up, down and rotational speeds, all independently controlled.
- An arrangement to rapidly center the process bar within a straight walled quartz tube supported between gas-tight, water-cooled end plates. Placement of the quartz tube is rather simple and adapters can be used to accommodate larger diameter tubes for larger process bars.
- Continuous water cooling for the outside of the quartz tube during operation.
- Assembly and dis-assembly of this system including removal of the completed process bar is simple and rapid.



Industry news

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Norge First Quarter

Sales Up 25 Per Cent

First-quarter Norge home appliance sales reached \$25,000,000, a 25 per cent hike compared to 1958 first quarter sales, according to Norge President Judson S. Sayre. Sayre added that the company was projecting up to a 50 per cent increase in the second quarter as the result of rising dealer orders and the consumer's impetus to buy home appliances.

EIA Formulates Plan to aid TV Servicemen

The Electronics Industries Assn. service committee has formulated a plan through which it hopes to implement a program designed to increase the stature of the television service industry.

According to Kenneth H. Brown, service manager of the Radio-Television Div. of Westinghouse Electric, the plan includes distribution to servicemen of

information concerning techniques of customer relations, merchandising, and the use of management tools in expense control.

EIA has also announced that Dr. Louis N. Ridenour, vice president and general manager of Lockheed Aircraft Corp.'s Electronics & Avionics Div., has been elected a member of EIA's board of directors. He replaces L. E. Root, vice president and general manager of Lockheed Aircraft's Missiles & Space Div.

Ground Broken For A. O. Smith Addition

Ground has been broken for a new \$2,100,000 addition to the A. O. Smith Corp. plant at Kankakee, Ill. It will be used for the manufacture of farm feed processing units and Permaglas mechanized storage units for industry.

According to Lee Osborne, general manager, the expansion was necessitated by an increasing flow of orders for these products from both farm and industry. He added that orders were running 35 per cent ahead of the past fiscal year.

Necchi to Manufacture Kelvinator Compressors

A licensing agreement for the manufacture of refrigeration compressors in Italy has been completed between the Necchi Co., Pavia, Italy and Kelvinator Appliance Division, American Motors Corp. The announcement was made by B. A. Chapman, executive vice president and general manager of Kelvinator.

Necchi will produce the compressors for S. A. F. E. T. Co., Milan, Italy, which already manufactures Kelvinator refrigerators, and other refrigeration equipment producers. The Italian company becomes the sixteenth foreign licensee in Kelvinator's international operations.



Kelvinator appliance division of American Motors Corporation and the Necchi Company of Italy, worldwide sewing machine firm, get together on the manufacture of refrigerating compressors. President George Romney of American Motors (center, left) and President Gino Gastaldi of Necchi (center, right), study cutaway model of a Kelvinator-designed compressor, which Necchi will produce under license in Italy. E. H. Wilcox (left), Kelvinator export vice-president, and B. A. Chapman (right), executive vice president and general manager of AM's appliance division, concluded the agreement with Necchi in Detroit.

Lindustries to Produce Automotive Air Conditioning

O. P. Leonard and William E. Lind, two men who helped pioneer automotive air conditioning, have announced the formation of a new company called Lindustries. Lind, who is general manager of the new company, has stated that the air conditioning div. will produce and market a complete line of units for American and foreign cars, trucks, busses, and special customer applications.

Lind also noted that the company is presenting a new concept in car cooling, since an under dash unit with two squirrel cage-type blowers will be used. Manufacturing and executive offices are at 1041 Foch St., Fort Worth, Tex.

\$200,000 Spent For Automatic Plating

Lincoln Metal Products Corp., Brooklyn, N.Y., has invested \$200,000 in automatic plating equipment that is capable of plating thousands of accessories daily, according to Irving Kates, president. He said the new manufacturing techniques provided by the equipment is being reflected in "quality merchandise within easy buying reach of the consumer."

Iranian Educators Tour Maytag Plant



Four educators from Iran included a tour of the Maytag Co.'s plants during a recent visit. The men are in the United States as guests of the government to study our educational system. Shown in Maytag's assembly area at Plant #2 are (Left to Right), Abbas Jadali, Aliraza Mirhashemi, Hossein Toosi, Hossein Beheshti, interpreter T. Vaziri of the International Cooperation Administration, Gordon Wasinger, and Ed Osborn. The latter two are members of the Iowa department of public instruction.

The equipment has 56 racks that carry between three and ten items through various steps of washing, nickel-plating, and drying. It takes fifteen minutes for each rack of items to pass a cycle.

Accept Four to NEMA

Four additional electrical manufacturers have been accepted for member-

ship in the National Electrical Manufacturers Assn., according to Joseph F. Miller, managing director of NEMA. They are: Raytheon Mfg. Co., Waltham, Mass.; Magnetics, Inc., Butler, Pa.; Engelhard Industries, Inc., Newark, N.J.; and American Radiator and Standard Sanitary Corp., New York, N.Y.

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INDUSTRY PERSONALS

Westinghouse Electric Corp.'s board of directors has elected **Mark W. Creasap, Jr.** as president and chief executive officer, and **Gwilym A. Price** as chairman of the board.

E. V. Huggins, vice president and chairman of the executive committee, and **John K. Hodnette**, executive vice president, were re-elected to these positions. **Russell B. Read**, formerly assistant treasurer, was named treasurer, reporting to George G. Main, vice president, finance.

The Vollrath Co., Sheboygan, Wis., has elected **Carl H. Rickmeier** to the position of vice president in charge of sales. He formerly was the company's general sales manager.

Concurrently, President **Walter J. Kohler** was elected chairman of the board and **Jean C. Vollrath** named executive vice president.

Republic Steel Corp.'s **L. S. Hamaker**, general manager of sales for the past six years, has been appointed assistant vice president in charge of sales. Succeeding Hamaker as general manager of sales is **S. A. Crabtree**, formerly assistant general manager of sales.

Caloric Appliance Corp., Tipton, Pa., has named a porcelain enamel and ceramic research and development specialist as a division manager. The appointment was announced by Robert Klein, vice president in charge of manufacturing, who stated that **G. C. Verkerk** will head the metal preparation and porcelain enamel departments.



HANSEN



VERKERK

Controls Co. of America, Schiller Park, Ill., has named **Robert V. Hansen** marketing manager, vending machine controls. He will report directly to Chas. M. Stainton, vice president and director of marketing, and will be responsible for the promotion of sales and assist in the development and promotion of new products.

Bryant Mfg. Co., division of Carrier Corp., has named **Keith T. Davis** manager of gas air conditioning, according to David W. Hoppock, vice president and general sales manager. Davis comes to Bryant from Syracuse, where he was assistant to the senior vice president of Carrier Corp.



DAVIS



MILLER

Onsrud Machine Works, Inc., Niles, Ill., has promoted **Robert M. Miller** to vice president and general sales manager. He will be responsible for marketing and direction of sales for all company divisions.

Bohn Aluminum & Brass Corp., Detroit, has announced two new appointments, according to R. C. Aylward, vice president of sales. **Lawrence K. Moore** was named district sales manager of the newly-opened Grand Rapids district sales office, and **C. C. Shearer** was appointed district sales manager of the Cleveland office, filling a vacancy left by the retired Jim Withington.

Moore has been active in industrial sales for the past 35 years and has represented Bohn since 1949. Shearer comes to Cleveland from Detroit, where he was production manager of a Bohn plant.

Norge Div., Borg-Warner Corp., has named **George Kipling** national service training supervisor, according to Elmer G. Fenton, Norge director of national service. Kipling will supervise the preparation of service program material developed for distributor and dealer use nationally, and direct a national training center set up by Norge. His headquarters will be at Muskegon, Mich.

Precision Tube Co.'s president, Norman H. Jack, Jr., has announced the promotion of several executives to new positions in the company. **Ivan G. Wentling**, former general manager, has been named executive vice president; **George W. Swint**, formerly plant superintendent, steps up to vice president in charge of plant operations; and **Mathew F. Balch, Jr.**, recently in charge of the com-

pany's sales promotion activities, has been named vice president in charge of sales.

Hussmann Refrigerator Co., St. Louis, has named **Aubrey W. Jewell** as general manager of the company's New Jersey plant, which will be completed in July. Present plans call for the production of refrigerators and related products for the new plant.

Jewell has served as vice president of manufacturing at Hussmann's Canadian subsidiary in Brantford, Ontario since 1950.

Midland Screw Corp., Chicago, has announced two promotions in their organization, according to R. D. Page, president. **Robert Sellin** has been elected vice president, and **Robert Schultz** will replace Sellin as plant manager of the Los Angeles plant.

Sandvik Steel, Inc., Fair Lawn, N.J., has announced the election of **Eric G. Messler** as vice president and assistant general manager. He has been with Sandvik in this country since 1955, serving as manager of coromant carbide sales and manager of steel sales. Prior to that he was with the Canadian affiliate for six years and the parent company in Sweden for ten years.

Jas. P. Marsh Instrument Co. and its affiliates have named **Robert E. Barnett** vice president for sales. He was formerly sales manager and has been with the Skokie, Ill., firm for 18 years.

Waste King Corp.'s Technical Products Div. has announced the promotion of **Robert L. Potter** to manager of the manufacturing services department, according to Boyd T. Marshall, vice president-general manager of the division. Potter has been with the division for two years and, prior to that, was owner-general manager of his own firm, Potter-Leff Engineering Co.

Pittsburgh Screw and Bolt Corp. has appointed **John T. Pennington** as sales representative in the Philadelphia area. He held a similar position with the Townsend Co. for five years prior to his appointment with Pittsburgh Screw.

Evansville Div. of Bendix-Westinghouse Automotive Air Brake Co. has appointed **Frank A. Haag** as general manager, according to W. B. Paine, president. He joined Bendix-Westinghouse in 1956 and has been manager of industrial products.

Landers, Frary & Clark, New Britain, Conn., has announced the appointment of **Harry C. Levenson** to the position of assistant to the president in charge of manufacturing operations of the subsidiary companies of the corporation. Levenson has conducted his own consulting and engineering service, assisting many large corporations in developing and improving production techniques and processes.

Robertshaw-Fulton Controls Co. has announced the election of **Richard S. Reynolds, Jr.** as chairman of the board of directors. He replaces John A. Robertshaw, who will serve as vice-chairman of the board until his retirement June 30. At the same time, **John H. Krey** was elected a member of the firm's executive committee.

Indiana Div., Robertshaw-Fulton Controls Co., a newly-formed branch, has appointed **John C. Mevius** as sales manager. The announcement was made by Henry F. Hild, general manager of the division. Mevius joined Robertshaw-Fulton in 1957 at its Eastern research center.

Temco, Inc., Nashville, Tenn., has promoted **W. M. Hollingsworth** to the newly-created position of assistant to the president, according to Donald Hart, president. Hollingsworth will remain manager of special products and services, in addition to his new duties.



HOLLINGSWORTH



SAUSER

Norge Div. of Borg-Warner Corp. has announced the appointment of **E. John Sauser** as general traffic manager. V. C. Rice, vice president of manufacturing and engineering, has said that Sauser will direct routing, carriers, and other matters relating to the shipment of home appliances nationally.

National Lead Co.'s Pacific Coast Branch has announced five personnel changes. **Douglas R. Crowe** has been appointed assistant to the branch manager, **Lloyd W. Merrill** has been named manager of the National Lead Co. of

Hawaii, Ltd., **E. J. Wardell** has been named central division sales manager for the branch, **Ned D. Baglion** has been promoted to central division manager-trade sales, and **W. H. Derry** becomes sales manager for the southern division in Los Angeles.

Joseph T. Ryerson & Son, Inc., Boston, has announced, via Allen P. Beckloff, general manager, three changes in sales management. **Joseph A. Moran** has been named sales manager, and **Arthur B. Burke** and **Napier B. Caldwell** have been appointed district sales managers.

Moran has been given overall responsibility for all sales activities, while Burke and Caldwell will each direct sales work in selected districts.

Jones & Laughlin Steel Co.'s Container Div. has named **Richard C. Reed, Jr.** to be district sales manager of the Port Arthur, Texas plant in addition to his duties as district sales manager of the New Orleans plant. The appointment was announced by C. K. Hubbard, division general manager.

Interchemical Corp. has announced the appointment of **Daniel Smith** as director of the Interchemical color center. He succeeds **F. L. Wurzburg, Jr.**, who is returning to the printing ink division to take charge of sales.

Smith was formerly head of the physics dept. at IC's central research laboratories, while Wurzburg has been with Interchemical since 1933.

Lord Mfg. Co., producers of engineered systems for vibration and shock control, has simultaneously opened a field engineering office in San Francisco and announced **R. M. Bergeson** as manager of the new office. For the past two years, Bergeson has been a field engineer in the Los Angeles office, being responsible for northern California, Washington, and Oregon.

Binks Mfg. Co., Chicago, has made four new sales appointments as part of an overall marketing plan for new products.

Andrew Cummins will head up the Cleveland sales territory as sales manager, **C. J. Rood** has been made sales manager of the Indiana territory, **Ed Cremer** will be the new export and regional manager of the New York and New England areas, and **Robert Rorden** will assist Cremer as branch manager of the New York City territory.

Vard, Inc., Pasadena, Calif. subsidiary of Royal Industries, Inc., has appointed **Paul F. Bruning** factory manager in charge of manufacturing. John A. Swint, president of Vard, stated that Bruning will coordinate production, assembly, and quality control, working directly under the president.

A.B.T. Div., Atwood Vacuum Machine Co., has announced the appointment of **David A. Elliott** as sales manager. He came to A.B.T. from the Budd Co., where he was sales manager of the Mid-Western area for nuclear systems. Prior to that, Elliott was application engineer with the Pacific Div., Bendix Corp.



ELLIOTT



AULT

Eagle-Picher Co. has elected **A. S. Ault**, president of Chicago Vitreous Corp., a vice president. Chicago Vitreous has been a division of Eagle-Picher since 1956. The election took place at the annual meeting of Eagle-Picher shareholders in Cincinnati.

Mueller Climatrol Div., Worthington Corp., has named **Richard B. Schmidt** general sales manager. He will supervise all national sales activities of the division, according to **H. P. Mueller, Jr.**, executive vice president.

Schmidt joined Mueller Climatrol in 1947 and has served as sales representative, sales manager, and sales promotion manager.

The Stanley Works, New Britain, Conn., has announced the appointment of **C. S. Gischel** to director of marketing and sales.

Flexible Tubing Co. has announced the appointment of **Robert H. Stevenson, Jr.** as manager—air-conditioning sales, according to Frederick K. Daggert, company president.

Stevenson will be responsible for directing sales of "Thermaflex" ducting through the company's air conditioning representatives in the U.S. and Canada. He was formerly general manager of Hanover Industries.

A finishing line

→ from Page 37

the finishing operation. Several colors are kept in readiness at all times, since it is normal to change from one color to another three or four times per day. Combination air-operated agitator pumps are used to keep the paint mixed and deliver it up to the spray booth on demand.

Alkyd melamine paint used

To meet the rigid requirements for the finish, the paint used is a high phthalic-type alkyd melamine system typical of the kind used in the appliance industry. All thinning and mixing is done according to the paint manufacturers' instructions. It is applied without being heated.

Changing from one paint to another is simply a matter of switching spray hoses and guns to the desired paint delivery pipe, stop pumping one material, and starting the pump on another.

Application is quite similar to operations in other finishing plants where water wash booths, standard spray guns and air-atomized, unheated paint are used.

The maximum allowable flash off was calculated to be 1.32 gallons per hour. This corresponds to the distance between the point where the parts leave the spray booth to the entrance of the oven. This distance is 52 feet, including the rise for aisle clearance.

Four-pass, sixteen-minute bake

The finish is baked for 16 minutes at 350° F. in a four-pass or double U-path through the bake section of the oven. The bake portion of the oven is located between the cleaning machine and the dry-off section.

The entire finishing operation at Triple A Specialty Co. was carefully planned with every requirement taken into consideration.

Industry news

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Inland Steel Plans Plant Modernization

An extensive modernization and rehabilitation program of Inland Steel Co.'s original plant in Chicago Heights, Ill., has been announced by John F. Smith, Jr., president.

Scheduled for completion in 1960, the program will convert the plant into the largest and most modern rail re-rolling mill of its type, according to Smith. The plant's capacity will be raised 75 per cent, or from 80,000 tons to 140,000 tons a year.

Norge to Add New Building

A \$258,000 expansion was announced by the Norge Div. of Borg-Warner Corp. for its wringer and automatic washer plant at Herrin, Ill. V.C. Rice, vice president of manufacturing and engineering, stated that the new building will be completed by late summer.

According to Rice, sales of washers are up some 20 per cent over last year, necessitating the expansion. The added building gives Norge 250,000 square feet of space at Herrin.

Fedders Establishes Record Shipment

A record shipment was established for Fedders Corp. during the fiscal period September through February, breaking the previous high for the same period by 18 per cent.

E. M. Becker, sales manager, points out that "Sales by our wholesale distributors to appliance retailers are running at a pace even greater than our factory shipments. This is a sure indication that interest is being generated at the consumer level earlier than before."

Landers, Frary & Clark Announces Two Moves

Bret C. Neece, president of Landers, Frary & Clark, has announced two moves in the company's organizational structure. The first of these is the completion of the transfer of the "Stanley" vacuum products division from the Center street plant to the Ellis street plant in New Britain, Conn.

The second is the consolidation of all electric motor manufacturing at the plant of the company's subsidiary, Handy-Hannah Products Corp., Whitman, Mass.

ARI Adds Three to Show Committee

Enlargement of the Air-Conditioning & Refrigeration Institute's show committee by the appointment of three additional members has been announced by Don V. Petrone, president of ARI. The committee will meet to consider a program of conference-type meetings in connection with the exposition at Atlantic City in November.

The new members are Paul Augenstein, president, Airtemp Div., Chrysler Corp.; M. M. Lawler, vice president, Worthington Corp.; and R. K. Surfass, vice president, Westinghouse Electric Corp.

American Ceramic Society Meets in Chicago, May 17-21

More than 220 papers on the science and technology of ceramics are on the program for the 61st annual meeting of the American Ceramic Society, to be held at the Palmer House in Chicago, May 17-21.

This represents the largest number of papers ever to be offered at the organization's annual meeting. Also on the agenda are the installation of officers and three new division trustees.

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You'll find it's true everywhere . . . leading manufacturers specify Hudee frames for their products. The leader in the field, Hudee rates first in performance, economy, appearance, satisfaction.

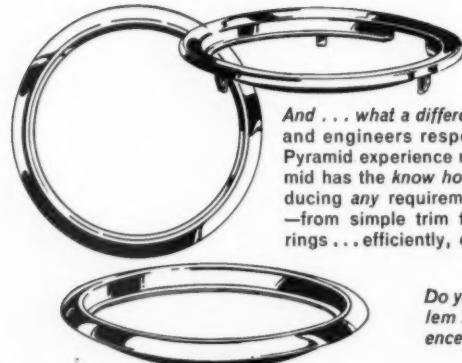
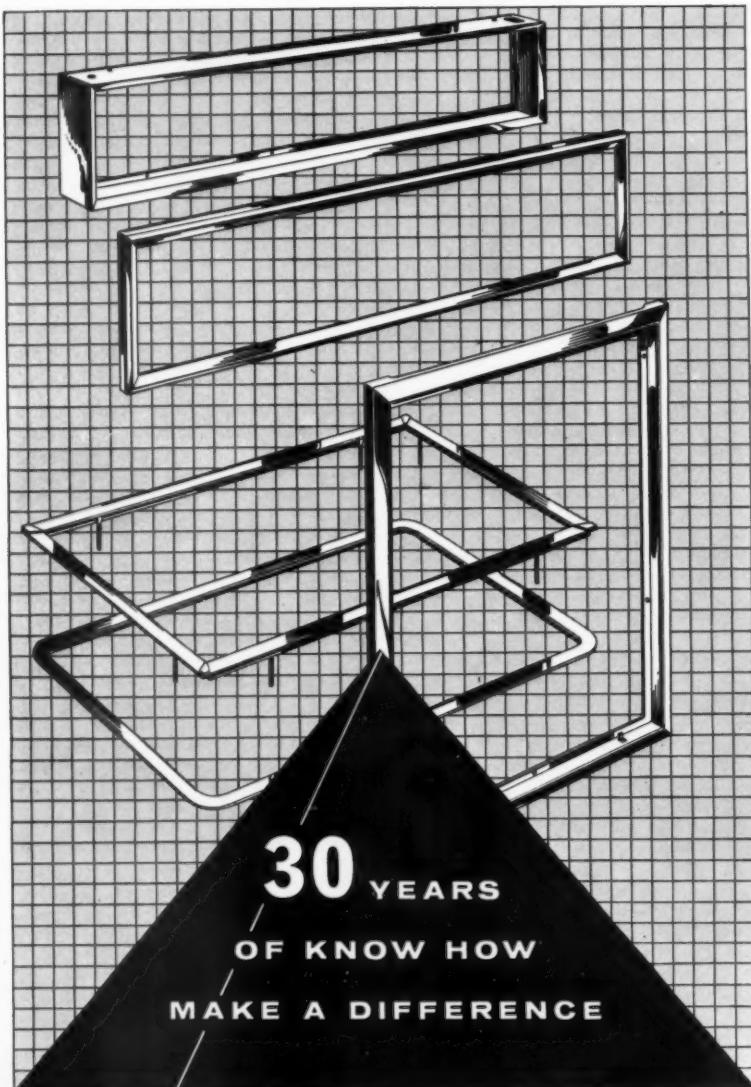
In addition to special frames, Hudee makes aluminum or stainless steel frames for each of 1,062 different sinks, lavatories, gas and electric ranges, drinking fountains, etc. . . . or for any custom need! Hudee has the patented interlocking lug that doubles as a fixture hanger making every installation a fast, simple, one-man operation. Remember, a Hudee frame always seals snug and flush for the tightest, cleanest installation—and your customer knows how to install Hudee, appreciates its plus value.

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Flexible Magnet for Refrigerator Doors

DEVELOPMENT AND PRODUCTION of a flexible magnet, with permanency claimed to be superior to most conventional magnets, has been announced by B. F. Goodrich Industrial Products Co., division of The B. F. Goodrich Co.

C. O. DeLong, president of BFG's Industrial Products Co., has stated that the new material is vinyl plastic specially compounded and processed to react exactly like metal or ceramic magnets. It can be produced in continuous lengths in an unlimited number of shapes ranging in size from spaghetti to garden hose. It can be cut without impairing its magnetic qualities.

DeLong further said, "It is attracted to ferrous metals or to itself. Unlike the steel type, which can be magnetized only lengthwise, with the 'north' pole at one end and the 'south' at the other, the new flexible magnet can be magnetized in any direction."

The plastic products div. is currently producing the material at a rate of more than ten miles per week for use in *refrigerator gasket seals*. In this application, DeLong explained, the magnetic strip is used inside a flexible gasket to form a perfect airtight seal around the entire perimeter of the refrigerator door. This eliminates the need for a latch, he said, because the strength of the magnetic strip is enough to hold the door closed.



Coil of magnet can be produced in continuous lengths in an unlimited number of shapes ranging in size from spaghetti to garden hose. The flexible magnet is made of vinyl plastic specially compounded to react exactly like metal or ceramic magnets.

METAL PRODUCTS STATISTICS

a current report on available production, shipment and sales figures for important products in the appliance and fabricated metal products manufacturing field

		1959 (Units)	1958 (Units)	% Change
Gas Water Heaters	February	242,400	216,300	+12.1
	Jan.-Feb.	496,700	451,700	+10.1
Gas Ranges, Built-In	February	20,400	12,800	+59.4
	Jan.-Feb.	40,700	25,800	+57.8
Gas Ranges, Free-Standing	February	136,200	121,700	+11.9
	Jan.-Feb.	264,500	237,100	+11.6
Gas Furnaces	February	64,700	44,200	+46.4
	Jan.-Feb.	128,000	91,900	+39.3
Gas Fired Boilers	February	5,700	5,100	+11.8
	Jan.-Feb.	11,400	10,700	+6.5
Gas Conversion Burners	February	5,700	7,500	-24.0
	Jan.-Feb.	12,500	14,900	-16.1
Electric Refrigerators	February	306,200	227,800	+34.4
	Jan.-Feb.	562,400	433,900	+29.7
Electric Freezers	February	90,600	66,500	+36.4
	Jan.-Feb.	169,400	129,500	+30.8
Electric Ranges, Free-Standing	February	86,000	74,900	+14.8
	Jan.-Feb.	165,200	153,700	+7.5
Electric Ranges, Built-In	February	48,600	33,800	+46.8
	Jan.-Feb.	90,200	64,000	+41.0
Electric Storage Water Heaters	February	75,500	58,000	+30.1
	Jan.-Feb.	138,300	119,700	+15.6
Electric Dishwashers	February	41,200	29,200	+41.2
	Jan.-Feb.	79,100	59,600	+32.7
Electric Food Waste Disposers	February	59,000	46,400	+27.1
	Jan.-Feb.	107,500	87,200	+23.2
Combination Washer-Dryer	February	20,586	19,396	+66.0
	Jan.-Feb.	37,508	25,838	+45.0
Washers, Automatic & Semi.	February	228,955	203,188	+13.0
	Jan.-Feb.	452,848	392,789	+15.0
Washers, Wringer & Others	February	68,871	64,955	+6.0
	Jan.-Feb.	133,469	120,194	+11.0
Electric Dryers	February	69,422	58,630	+18.0
	Jan.-Feb.	148,015	129,105	+15.0
Gas Dryers	February	36,852	21,053	+75.0
	Jan.-Feb.	76,479	51,371	+49.0
Vacuum Cleaners	February	271,396	225,631	+20.3
	Jan.-Feb.	513,912	491,120	+4.6
Metal Furniture	February	*	*	-3.0
	Jan.-Feb.	*	*	+1.0
Television	January	437,096	433,983	+0.7
Radio	January	1,124,737	1,026,527	+9.8
Compressor Bodies (1)	December	278,283	223,456	+24.5
	Jan.-Dec.	3,559,057	3,962,142	-10.0
Steel Barrels & Drums	January	2,604,595	2,587,061	+0.5
Steel Pails	January	5,008,268	5,398,273	-8.0
Typewriters	February	84,642	*	*
	Jan.-Feb.	188,988	*	*

(1) 1958-57

* Not Reported

† Output

Sources for this information: Gas Appliance Manufacturers Association, National Electrical Manufacturers Association, American Home Laundry Manufacturers Association, Vacuum Cleaner Manufacturers Association, National Association of Furniture Manufacturers, Electronic Industries Association, Air-Conditioning and Refrigeration Institute, and U.S. Dept. of Commerce.

WHAT'S YOUR A.M. PROBLEM?



A.M. (Air Movement) is a source of new and bigger problems for the air conditioning, heating, ventilating and refrigeration manufacturer. However, we have an answer for one of your headaches — a reliable source for blower housings. DE-STA-CO offers you all these advantages:

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- Fast delivery. Many in stock, both parts and assemblies.
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Serving air conditioning, refrigerating, heating and ventilating industries for 40 years

Presstime News

AWS Meeting Held in Chicago

The 40th annual meeting of the American Welding Society was held in conjunction with the Welding Show in Chicago, April 6-9. At the annual meeting, held in the Sherman Hotel, Charles I. MacGuffie, manager special product department, Air Reduction Sales Co., was elected president of the Society. Other officers of the society elected at the same time were: A. F. Chouinard, director of research and development, National Cylinder Gas Div., vice president; and R. D. Thomas, Jr., president of the Arcos Corp., first vice president.

Roper Adds Rotisserie To 30" Range Line

A 30" gas range with four-way rotisserie grill built into the cooking top has been introduced by the Geo. D. Roper Corp., Kankakee, Ill. The model barbecues, broils, or grills on top of the range. When not in use, it covers to provide work space. Fats and grease drain into a cool pan below the burners.

According to company spokesmen, enthusiastic acceptance of the grill on Roper's 36" models was the deciding factor in adding it to the 30" line.

J & L Sets Record For First Quarter

An alltime record for first-quarter net income was established by Jones & Laughlin Steel Corp., according to Avery C. Adams, chairman and president. The total was \$15,738,000, or \$1.97 per share of common stock. This broke the previous first-quarter record of \$13,559,000 set in 1956.

Adams predicted that J&L's second quarter sales, shipments, and net income will exceed those recorded for the first quarter.

Norge President Predicts Second-Quarter Boom

Judson S. Sayre, president of Norge Home Appliance Div., Borg-Warner Corp., has predicted that second-quarter production will be 90 per cent over last year's like period. He added that 1957 second-quarter production will be surpassed by 50 per cent, stating that "Rapid movement of our gas and electric home appliances through the dealer is keeping the distribution pipeline wide open for more volume."

Stockholders Vote For Merger

Stockholders representing more than 90 per cent of Metals & Controls Corp.'s outstanding stock have voted to merge the Attleboro firm into Texas Instruments, Inc., Dallas, Tex., according to C. J. Thomsen, president of Metals & Controls. The merger is subject to approval of Texas Instruments' stockholders.

Armco Drainage Builds Welded Pipe Plant

A \$1 1/2 million plant for the manufacture of welded pipe is being built near Livermore, Calif. by Armco Drainage & Metal Products, Inc., a subsidiary of Armco Steel Corp.

Stuart R. Ives, Armco Drainage president, stated that the new plant will serve the Rocky Mountain and Pacific Coast areas, replacing existing manufacturing facilities in Berkeley, Calif.

NEMA Air Conditioner Section Plans United Campaign

"Beat The Heat With an Air Conditioner" will be the theme chosen by the room air conditioning industry for its first united sales promotional campaign. Under the sponsorship of National Electrical Manufacturers Assn.'s Room Air Conditioner Section, the campaign will be highlighted by a "Beat The Heat Week" May 17-24.

Meeting in New York, the nation's top room air conditioner manufacturers joined in predicting record-breaking retail sales for 1959. According to Joseph B. Ogden, chairman of the Air Conditioning Section and vice president at Airtemp Div., Chrysler Corp., retail sales can be expected to reach between 1,600,000 and 1,750,000.

Kelvinator Sales Rise

Kelvinator appliance sales for major products during the first quarter of this year ran 21.4 per cent ahead of the same period a year ago, according to B. A. Chapman, executive vice president.

Refrigerators, up 25.2 per cent, accounted for the largest increase, followed by home laundry appliances, up 22.5 per cent.

Dow Chemical Earnings Up

Dow Chemical Co., Midland, Mich., has reported a net income of \$41,768,855, or \$1.59 per share of common stock outstanding, for the nine months period which ended Feb. 28, 1959. Sales for this same period totaled \$511,353,127.

INDUSTRY MEETINGS

→ from Page 83

APPLIANCES

Tenth Annual Appliance Technical Conference, sponsored by the American Institute of Electrical Engineers, Hotel Manger, Cleveland, Ohio, May 18-19

DESIGN ENGINEERING

Fourth Annual Design Engineering Show, Convention Hall, Philadelphia, Pa., May 25-28, 1959. Concurrently, Fourth Annual Design Engineering Conference.

INDUSTRIAL FINISHING

Fifth Industrial Finishing Exposition, sponsored by the American Electroplaters' Society, Detroit Artillery Armory, Oak Park, Mich. June 15-19, 1959.

HOME LAUNDRY

The American Home Laundry Manufacturers' Association's Annual Convention, Edgewater Beach Hotel, Chicago, June 18-19, 1959.



COMING FEATURES

DESIGN

THE ROLE OF THERMOSTATS IN
APPLIANCE DESIGN

FABRICATION

MAGNETIC FORCE WELDING
FOR VINYL CLAD STEEL

FINISHING

NEW AUTOMATIC PAINT FINISHING
LINE FOR DATA PROCESSING MACHINES

NEW PLANT DESIGN FOR PORCELAIN
ENAMEL ON ALUMINUM

GENERAL

VINYL ON METAL AT SUN STEEL
POLISHING WITH POWER BRUSHING

Armco Doubles First Quarter Earnings

First quarter earnings of Armco Steel Corp. increased more than 100 per cent above one year ago to an estimated \$21,150,000 on sales of \$259,000,000, according to R. L. Gray, president.

Estimated earnings equaled \$1.43 per share and represent a profit of 8.1 per cent on each dollar of sales. Gray added that the shipping rate for the quarter was slightly over 90 per cent.

Work Started On Reynolds Supply Building

Reynolds Aluminum Supply Co. of Los Angeles, a wholly-owned subsidiary of Reynolds Metals Co., has announced ground-breaking work for a new warehouse and office building. The new structure will be located at 6446 E. Washington Blvd., Los Angeles.

The supply company will carry a line of aluminum sheet, coil, rod and bar, structurals, tubings, and extrusions, serving the greater Los Angeles metropolitan area.

NEMA Elects Officers For '60 "Electrical Week"

At the annual meeting of the National Electrical Week industry committee in New York, N. J. MacDonald, president of The Thomas & Betts Co., Elizabeth, N.J., was elected chairman of the 1960 "Electrical Week" observance.

R. M. Johannessen, president, Johannessen Electric Co., Greensboro, N.C., was appointed vice chairman of the event. Other officers, both of whom were re-elected, include H. A. Webster, president, T. Frederick Jackson, Inc., as treasurer; and A. W. Hooper, executive director, National Assn. of Electrical Distributors, as secretary.

Refrigeration Discount Corp. Changes its Name

Refrigeration Discount Corp., Inc., sales financing subsidiary of Kelvinator, has officially changed its name to "Redisco." Announcement of the change was made by C. R. Brogan, president, who pointed out that the company is currently referred to as "Redisco" in both the appliance and financing fields.

Carrier Develops Heat Pump

A low-cost, one-piece residential heat pump for year-round air conditioning of small homes and multi-unit dwellings has been developed by Carrier Corp. Russell Gray, vice president and general manager of Carrier's Unitary Equip-

ment Div., has said that the new heating-cooling unit will cost less than \$1,000 re-installed. He further stated that the need for lower cost central air conditioning systems and the growing popularity of the heat pump motivated the new design.

Textron Acquires Townsend Co.

Townsend Co., New Brighton, Pa., fastener producers, has accepted an offer of \$20 per stock share by Textron, Inc. to buy all Townsend assets. President F. R. Dickenson of Townsend has stated that his firm will be operated as

a wholly-owned subsidiary of Textron with present personnel and policies remaining the same.

Standard-Toch Acquires Central Paint Stock

Carl Bauer, president of Standard-Toch Chemicals, Inc., Staten Island, N.Y., has announced the acquisition by Standard-Toch of all the outstanding capital stock of Central Paint & Varnish Works, Inc., Brooklyn, N.Y.

L. Francis Case will continue as president of Central Paint; Bauer will serve as chairman of the board of directors of the Brooklyn company.



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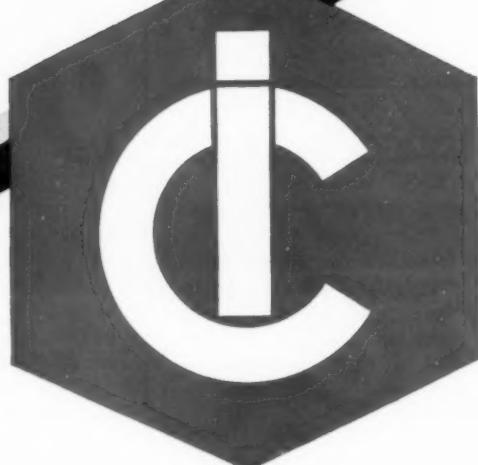
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editorial voice of the national safe transit program

devoted to improving packaging methods and shipping and materials handling methods for the appliance and metal products manufacturing industries. This section contains plant experience information and industry advances for the use of all executives and plant men interested in improving packaging and shipping methods and in loss prevention. The section contains complete information on the national safe transit pre-shipment testing program for packaged finished products and detailed reports of divisions and sub-committees of the National Safe Transit Committee.

Corrugated Packaging Book

Information on selection of the proper corrugated packaging for a new or existing product is detailed in a revised edition of "How To Pack It," a 32-page, fully-illustrated book. It contains two sections; one is devoted to basic, the other to special corrugated box designs. Various box styles and designs are also shown in this packaging "idea book."

A copy of the book may be obtained upon request to Dept. MPM, Hinde & Dauch, Sandusky, Ohio.

Four-Directional Lift Truck

Capable of transporting and stacking 3,000-lb. loads up to 16 feet wide in storage aisles no more than eight feet wide, this four-directional version of the Reach-Fork truck was designed by the Raymond Corp.



It is spark-enclosed to permit operation in hazardous areas and an auxiliary lift 18 inches is incorporated for ceiling-high stacking with minimum collapsed height. The truck also tiers conventionally in six-foot aisles.

MPM MAY • 1959

MHI Exposition Slated for June

The Material Handling Institute's annual exposition will be held June 9-12 in the Cleveland Public Auditorium, Cleveland, Ohio. Over 200 exhibitors will highlight the event. Concurrently, the American Society of Mechanical Engineers, Material Handling Div., will hold three sessions June 9, 10, and 11 on industrial material handling problems.

"Reusable Box" Film Now Available

The National Wooden Box Assn. announces the availability of a color and sound 16 mm motion picture entitled "Reusable Wooden Containers." Theme of the 20-minute film is the reduction of distribution and production costs through repeated use of wooden containers.

Wilkinson Chosen Secretary of NSTC

William M. Wilkinson has been elected secretary of National Safe Transit Committee, Inc., according to President Ralph F. Bisbee. He will assume full responsibility for the corporation's Washington, D. C. headquarters.

Wilkinson has been on the NSTC staff for eighteen months, serving as assistant secretary and having been active in the organization's public relations program.

Two-Color Boxes used for Cookware

Brightly printed containers that are designed, it is said, to reflect the quality of the product, are now being produced by Gaylord Container Corp. for the

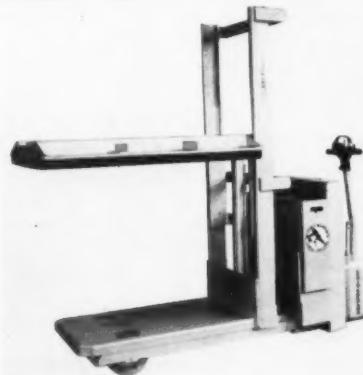
Vita-Craft Corp., manufacturers of cooking ware.

Each box is printed with a two-color reproduction of the Vita-Craft trademark and slogan with several different sets of utensils shipped in the same box. To identify the contents, different color combinations are used. "Oyster White" liner provides a printing surface for the trademark. Interior packaging holds each item in place.

Load Stabilizer Augments "Walkie" Low-Lifts

A load stabilizer attachment, which was adapted for use with its low-lift "walkie" line, has been developed by Lewis-Shepard Products, Inc. Designed primarily for handling skid loads of coated flat paper stock, the stabilizer is also recommended for all types of loads that are not stable.

The stabilizer is hydraulically oper-



ated. Various clamping heights may be furnished to suit the height of the load by the adjustable top clamp arm. Sponge lined pads clamp down on any material and hold it firmly in place while the load is transported.

*Printing sells
what the shipper ships*



Clean, sharp printing makes traveling billboards of H & D corrugated boxes. Brand names get attention, merchandise moves faster. Is your shipping box making a colorful impression? Better see H & D.



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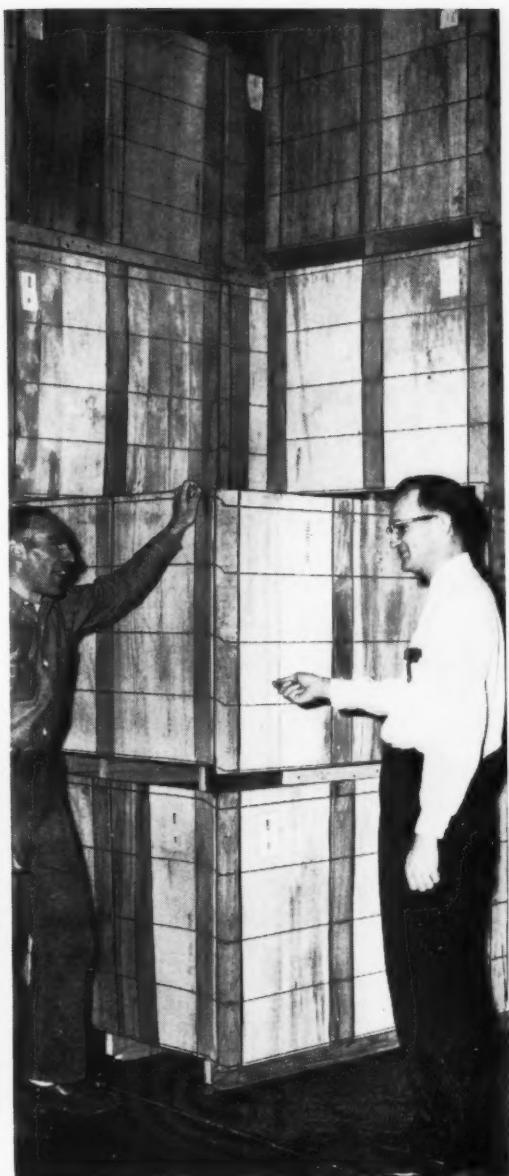
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PALLET BOXES Give Us
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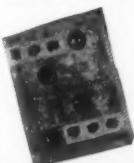


CHICAGO MILL Wirebound Pallet Boxes give the best storage, stacking and shipping protection to the rubber tires manufactured by Swan Rubber Company, Carey, Ohio. Shipped knocked-down to save storage space—they are assembled in three minutes without nails, to hold, and protect from crushing, a tremendous number of Swan Tires. Boxes interlock making it possible to ship Swan tires stacked in trucks or freight cars without any dunnage.



CHICAGO MILL CONTAINERS stacked 4 high in Swan Warehouse without buckling, sagging or collapsing, even though each container holds up to 2,000 lbs. of tires. Swan customers stack them 6 high to get fuller utilization of their storage space.

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FREE! Illustrated Catalog describing Chicago Mill's Shipping Containers and Services!



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PALLET BOXES—
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E-Z Pak Cleated Corrugated
(Watkins type)

Wirebound Crates

Wirebound Boxes

Corrugated

Hinged Corner Crates or Boxes

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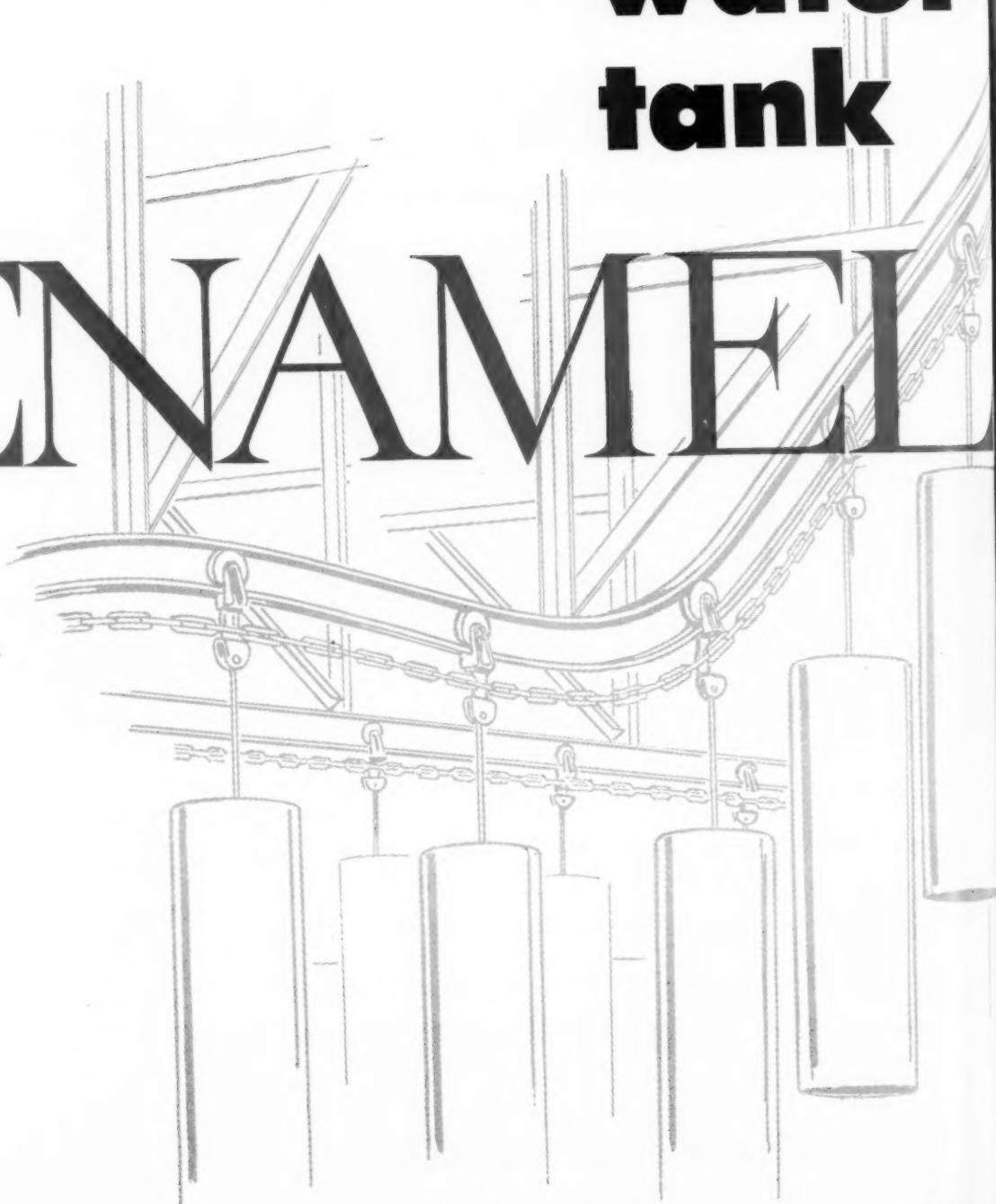
PLANTS

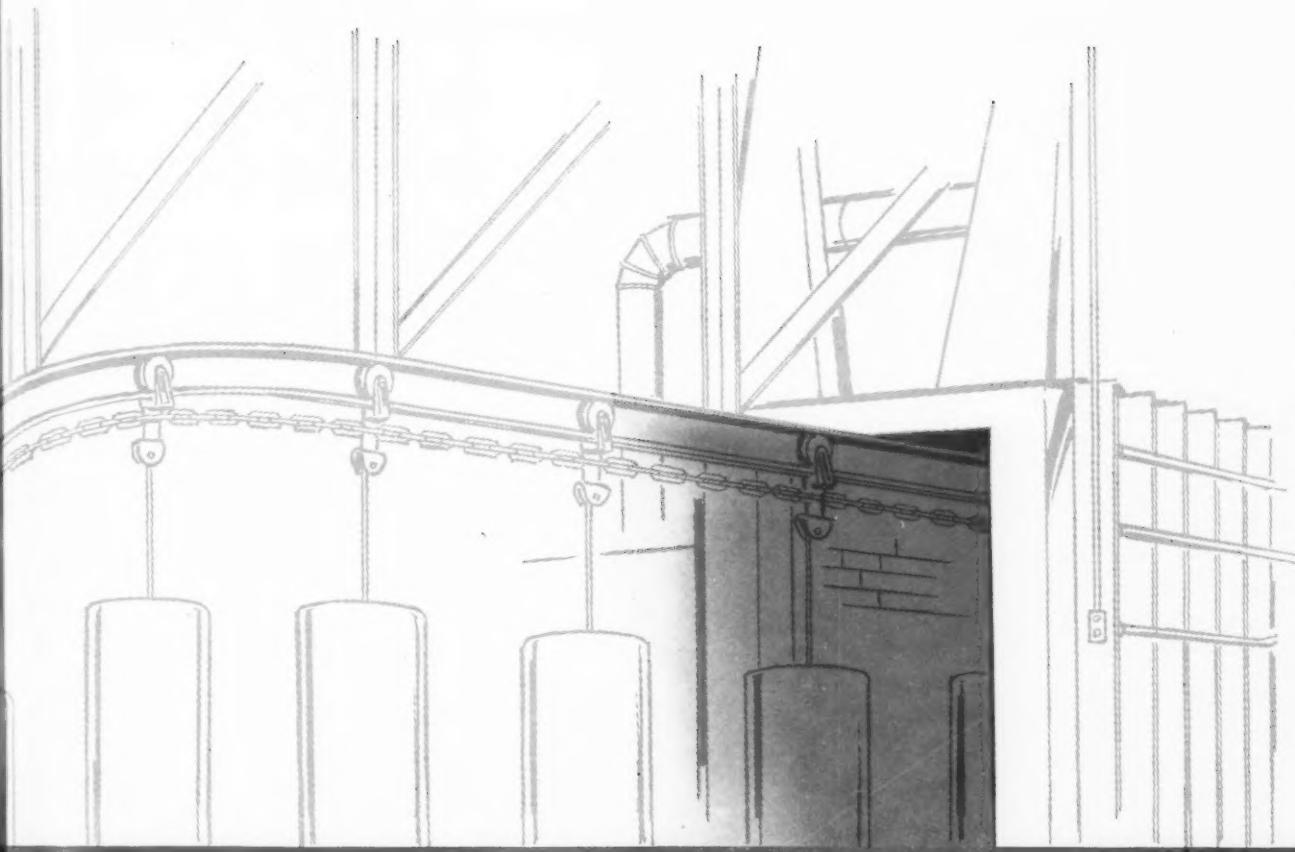
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Gas appliance sales

→ from Page 75

ing. Obviously, the interests of the Electric Industry in home heating has put a new interest in this section of the Gas Appliance Industry and spurred new promotional efforts along this line. A committee has been appointed to develop a program centered on gas heating, and it is assumed that an important part of this program will be directed to mass building along with the interest to the individual home builder.

West coast

Stanley Skaste, chairman of the Pacific Coast Gas Association, Manufacturers Section, reported it is indicated that the West Coast in all categories of gas appliances and equipment is moving ahead at a faster pace than either the Midwest or Eastern sections. He accounted for this in two ways: (1) continued pace of increase in population, (2) steady increase in mass building.

A good index for coming months on gas appliances and products is the record rate of sales and shipments by component manufacturers serving the industry. This would not necessarily reflect in appliance sales except for the fact that the finished appliance manufacturers report very low factory inventories.

New officers

New officers for GAMA are: president, Edward A. Norman, president, Norman Products Co., Columbus, Ohio (manufacturers of central heating equipment); first vice president, Wendell C. Davis, president, Cribben & Sexton Co., Chicago; second vice president, William G. Hamilton, Jr., president, American Meter Co., Philadelphia; treasurer, Stanley H. Hobson, chairman, Geo. D. Roper Corp., Rockford, Ill.; and secretary, Harold Massey, managing director, Gas Appliance Manufacturers Association, Inc.



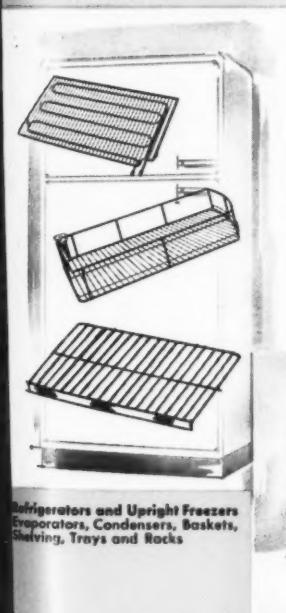


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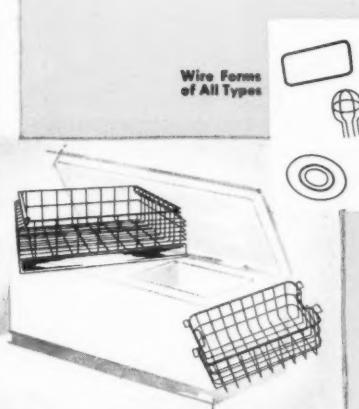
She knows exactly what she wants. High styling and functional beauty are important to her home decor. But even more, she wants *and expects* year upon year of convenience . . . plus dependable, maintenance-free service from each useable, functional part of any appliance.

Therefore—when your new appliance requires the finest in modern welded wire components, save valuable time by calling upon Union Steel. Take advantage of their experienced leadership in the design, fabrication, in-plant finishing and pre-planned delivery of beautifully styled, dependable welded wire components.



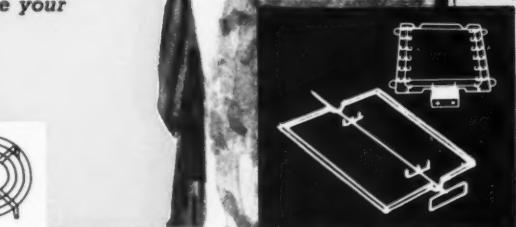
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Union Steel's engineers will gladly assist you. A phone call to NA tional 9-2181 (Albion, Michigan) will be your best investment of the year.

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Room Coolers

Ventilating Fan

Dehumidifiers

Grilles, Vent

Guards and

Special Sections

Ranges and Built-Ins
Oven Heating Ele-
ments, Rocks, Side
Frames



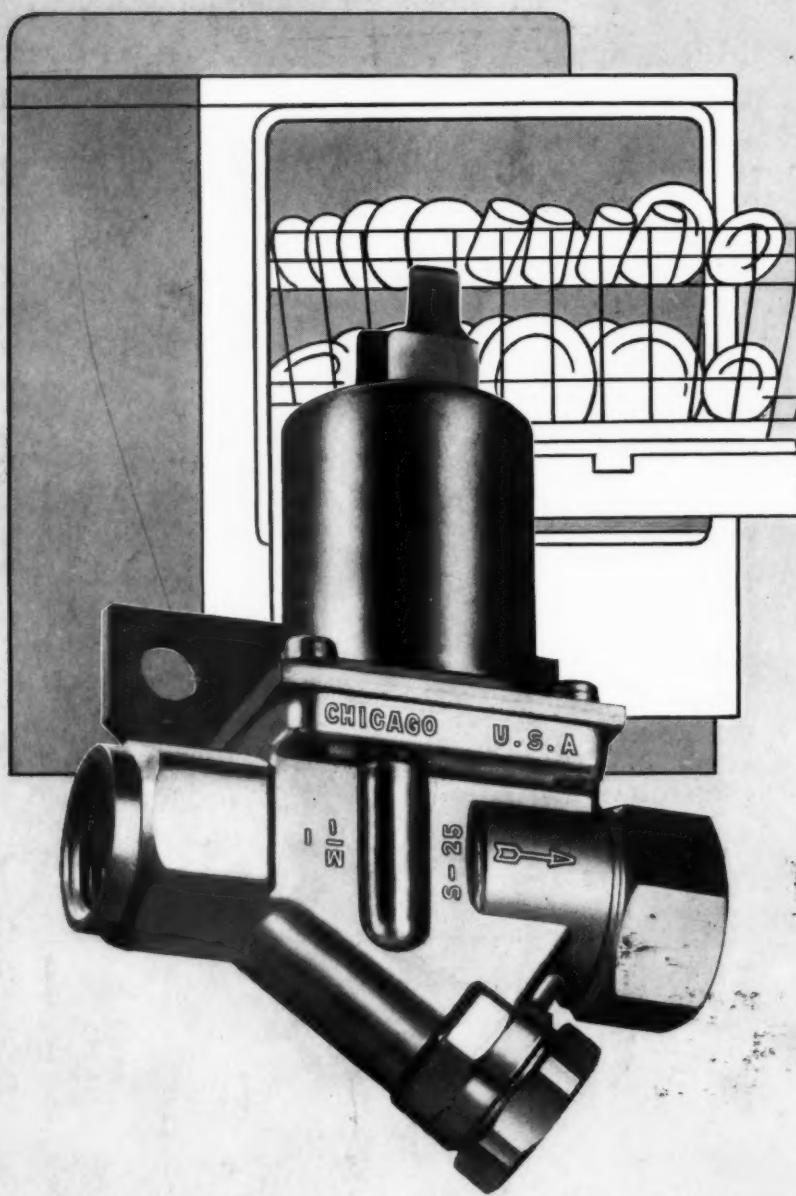
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Incoming dirt CAN'T CLOG this new

DOLE DISHWASHER VALVE



DESIGN DATA

The improved Dole (S-25 Series) Single Solenoid Shut-off Valve was designed for applications requiring moderate flow rates (up to 5 GPM) and dependable remote, electrical operation. Contains patented flow control, special Monel inlet screen and slow-closing diaphragm that eliminates water hammer. Pressure capacity—200 psi. In addition to dishwashers, engineered for use in ice cube machines, water softener equipment, drinking fountains and dispensers.

*Solves troublesome
service
problem—keeps
customers satisfied*

Now . . . for the first time . . . a dishwasher shut-off valve that is not affected by the tiny particles of dirt found in most incoming water supplies.

The new Dole Single Solenoid Valve incorporates an entirely new principle. A unique diaphragm and rubber poppet arrangement momentarily hold dirt in suspension . . . digest it . . . pass it through without clogging or damaging the automatic control.

Other valve designs permit trapping and holding of dirt resulting in jamming and refusal to close properly . . . eventual valve failure . . . costly part replacement.

This new Dole S-25 Single Solenoid Shut-off Valve insures continuous trouble-free operation . . . does away with costly service problems . . . and most important . . . keeps customers satisfied.

Dole pioneered the use of solenoid valves for turning water on and off, and regulating flow in automatic dishwashers. This newest design is a good example of Dole's continuous program of product improvement and development . . . finding better solutions to problems of fluid control.

If your products or projects involve questions of flow rate, mixing, temperature control, shut-off, dispensing . . . Dole Valves may be your answer.

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